GO BIG OR GO HOME: A CASE STUDY OF CREATIVITY IN CURRICULUM REDESIGN

A Dissertation

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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August 2018

Major Subject: Educational Psychology

ABSTRACT

In higher education, modifications to curricula are common. Veterinary medical education scholarship in the area of curriculum renewal is relatively new, as it has primarily focused on course-level design, innovative teaching strategies, and the integration of skills into a curriculum. Recent calls for increased scholarship in this area have resulted in reports from veterinary medical education programs of their curricular renewal processes, achievements, and lessons learned. One program, in particular, from the College of Veterinary Medicine and Biomedical Sciences (CVM) at Texas A&M University utilized the Program (Re)Design (PRD) model to redesign the first three, pre-clinical years of the four-year veterinary medical education curriculum.

While recent papers on curricular change in veterinary medical education allude to factors that lead to successful curricular change and innovation, these papers do not necessarily focus on creativity as part of the curricular change process. This dissertation study aimed to identify evidence of creativity as CVM faculty redesigned the veterinary medical education curriculum using the PRD process. The researcher also used an existing model for organizational creativity to investigate the organizational stimulants and impediments to faculty creativity during the PRD process. The explanatory case study methodology was used as the primary research method.

Emerging results suggest creativity was evident throughout, and as a result of, the curriculum redesign process. An analysis of the curriculum framework and meeting notes reveal data associated with both novelty and usefulness. Among focus group, interview, and documentary data, the researcher found evidence of both creative cognitive and affective

aptitudes. Study findings also revealed several environmental factors that influenced CVM faculty creativity during the PRD process.

Implications of the study are discussed as they relate to faculty development efforts and curriculum design in higher education. This dissertation concludes with an overview of study limitations and recommendations for future research.

DEDICATION

Para mi mamá, por su valentía y buen ejemplo.

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the support numerous people. I extend my deep appreciation to Dean Eleanor M. Green, the faculty, staff, and administrators of the College of Veterinary Medicine and Biomedical Sciences at Texas A&M University for their collaborations, words of encouragement, and for continually challenging me to step out of my comfort zone. Specifically, I wish to thank Dr. Nicola Ritter and members of the Curriculum Review Planning Team: Dr. Kristin Chaney, Dr. Elizabeth Scallan, Dr. Jordan Tayce, Dr. Jodi Korich, Dr. Lisa Keefe, Dr. Jacqueline Turner, Dr. Karen Cornell, and Dr. Kenita Rogers.

I also extend appreciation to my committee members: Dr. Shanna Hagan-Burke, for her dedication to seeing me complete my doctoral studies; Dr. Jeffrey Liew, for his positive and constructive feedback; Dr. X. Ben Wu, for inspiring me to think both creatively and logically; and Dr. Radhika Viruru, for her constructive feedback and methodological expertise.

I am especially appreciative of my friends and mentors, Dr. Debra Fowler and Dr. Carolyn Sandoval, both of whom have helped me grow beyond measure in my professional and personal journey. I will carry their words of advice and inspiration in all my future endeavors.

I wish to thank my mom for her countless sacrifices and unconditional love; my dad for making me laugh in times when laughter felt impossible; my husband for serving as a constant source of balance and serenity; my best friends for being a sounding board when I needed advice and a listening ear; and my brother for “having my back” in both the good and challenging times in our lives.

Finally, I am humbled by my faith as the fountain of my strength and wisdom. I offer this endeavor to God, with whom all things are possible (Mathew 19:26).

CONTRIBUTORS AND FUNDING SOURCES

This work was supported by a dissertation committee consisting of Dr. Shanna Hagan-Burke, co-chair, and Dr. Debra Fowler, co-chair, of the Department of Educational Psychology, Dr. Jeffrey Liew of the Department of Educational Psychology, Dr. Radhika Viruru of the Department of Teaching, Learning, and Culture, and Dr. X. Ben Wu of the Department of Ecosystem Science and Management.

This work was also supported by feedback from Dr. Carolyn Sandoval and Dr. Ra'sheedah Richardson of the Texas A&M University Center for Teaching Excellence. The power analysis depicted in Chapter III was conducted by Dr. Nicola Ritter of the College of Veterinary Medicine and Biomedical Sciences at Texas A&M University.

All other work conducted for this dissertation was completed by the student independently.

This work was completed without outside funding contributions.

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CHAPTER I

INTRODUCTION

Imagine a group of faculty members sitting around a table discussing problems with their current academic program. One faculty member suggests time is limited and it is becoming increasingly difficult to teach students everything in the discipline. In a disappointed tone, another faculty member agrees and suggests he spends too much time at the beginning of his course reviewing material the students should already know. As the group nods in agreement, a third faculty member offers a different perspective. “Perhaps we cannot teach them everything there is to know in our discipline,” she suggests. “Maybe we have to prioritize and, instead, teach them skills that will help them learn on their own.” The group reacts to her comment with glances of uncertainty. “Maybe we’re lecturing too much and should shift how we view ourselves as educators,” she presses further. A colleague responds, “But this is the way we have always taught.”

Higher education is no stranger to creativity and innovation. Higher education institutions, in fact, have been described as “creative ecologies,” or environments enriched with creativity, consisting of people who are highly capable and utilize their ingenuity frequently (Comunian, Gilmore, & Jacobi, 2015; Philip, 2013). At a major research institution, faculty live and breathe creativity as they design and implement research experiments. Beyond their research efforts, faculty are also involved in teaching. However, they are less accustomed to thinking beyond their own courses and examining the whole program’s curriculum, or set of courses that students experience on their academic path toward a degree. To redesign a program or curriculum, faculty must be able to operate at a more global level (Fowler, Macik, Sandoval,

Bakenhus, MacWillie, 2016). This process involves engaging in creative thinking without being hindered by the current state of a program or potential barriers. In higher education, barriers that impede the curricular design process have been identified. Such barriers include institutional, departmental, and faculty priorities (Cohen, Fetters, & Fleischmann, 2005; Hubball & Pearson, 2010), disciplinary isolation (Hubball & Pearson, 2010), administrative structures, reward systems that value research over teaching, the balance between curricular coherence and flexibility, lack of faculty time (Hubball & Pearson, 2010), and general lack of pedagogical expertise (Hubball & Pearson, 2010; Innes, 2004; Jones, 2002; McInnis, 2000; Oliver & Hyun, 2011; Stark & Lattuca, 1997; Toombs & Tierney, 1991; Walkington, 2002).

The benefits of encouraging faculty to think creatively about curriculum redesign are clear; when an organization's employees are creative, the organization flourishes. As Florida and Goodnight (2005) stated, "A company's most important asset…is an arsenal of creative thinkers whose ideas can be turned into valuable products and services" (p. 124). With faculty being higher education's arsenal of creative thinkers, how can we encourage them to creatively solve curricular problems at the program level, and subsequently, foster student learning beyond individual courses?

Program (Re)Design Model

The Program (Re)Design (PRD) model is an eight-step process utilized by faculty as they redesign their program or curriculum (Fowler, Macik, Turner, & Hohenstein, 2015). Utilizing the curriculum development literature (Diamond, 2002; Wolf, 2007), the customized PRD model was developed and implemented in various disciplines at a large research institution (Fowler, Macik, Turner, & Hohenstein, 2015). The PRD model begins with the formation of a team consisting of faculty within a disciplinary program, an advisor, a graduate student, undergraduate

student representatives, a program leader, and an academic developer (Fowler, Macik, Turner, & Hohenstein, 2015). Once the team is formed, the group meets regularly to progress through the steps of the model, which usually takes eighteen months to two years to complete. The second step involves gathering data to inform the redesign of the program. Internal data are collected using surveys and focus groups, institutional and college strategic plans, and input from faculty. External data are also gathered and methods can include surveying and interviewing employers, reviewing curricula from peer institutions, and surveying alumni.

At the beginning of the PRD process, early conversations among the curricular review team involve defining their discipline. Repko (2008) defines a discipline as an academic community with "preferences regarding phenomena to study and theories and methods to use, shared terminology called concepts and epistemological and ethical and ideological outlooks" (p. 94). Once the team has identified the major concepts that make up the discipline and gathered data to confirm, they proceed to developing program learning outcomes (Fowler, Macik, Turner, & Hohenstein, 2015). The third step involves utilizing the data to create a set of program learning outcomes, which describe the knowledge, skills, and attributes students are expected to possess upon graduation from the program. Then, the team creates performance criteria in the form of rubrics, which define benchmarks for each program learning outcome in increasing complexity. With rubrics created, the team develops a curriculum map to outline where the program learning outcomes will be introduced, reinforced, and demonstrated. Development of the curriculum map enables programs to identify gaps and redundancies in the learning outcomes across courses. Upon completion of each step, the team communicates with other faculty in the department or program to seek feedback and obtain buy-in for the proposed curricular changes. Once a curriculum map is developed, the team creates curricular materials that determine how

the learning outcomes will be implemented at the course level. The academic program developer uses this step as an opportunity to encourage the use of effective instructional strategies, such as active learning, reflection, and formative and summative assessment. Finally, the team develops an implementation and evaluation plan to promote continuous improvement at the program level.

The PRD process is not trivial and requires significant commitment on behalf of the PRD team (Fowler, Macik, Turner, & Hohenstein, 2015). As a major change process at the organizational level, the PRD process considers best practices in fostering educational change. Best practices include working collaboratively across a variety of stakeholder groups, maintaining constant communication among all stakeholders, utilizing research-based teaching and learning principles, leveraging external facilitators who offer a non-biased perspective, viewing the curriculum change systematically, and offering opportunities for short-term successes (Giersch, McMartin, Nilsen, Sheppard, & Weilerstein, 2015). In addition to fostering organizational change, research findings on the PRD model suggest that as faculty engage with the PRD process, their perspectives on curriculum and on their own teaching change (Fowler, Macik, Kahaitu, & Bakenhus, 2016). For example, faculty involved in a redesign initiative in one department reported being better able to determine how all of the courses created a cohesive program, and they were more likely to utilize evidence-based instructional strategies. Research on the PRD model also suggests that many factors contribute to the change process (Fowler, Macik, Kahaitu, & Bakenhus, 2016), such as level of faculty engagement throughout the PRD process, facilitation by an external educational developer, and the structured nature of the PRD process.

A team of faculty and staff from the College of Veterinary Medicine and Biomedical Sciences (CVM) at Texas A&M University, called the Curriculum Review Planning Team

(CRPT), facilitated the PRD process for the veterinary medical education program. For a detailed overview of the program's curriculum redesign process, refer to Chaney et al. (2017) and Macik et al. (2017).

Creativity

Anyone examining the literature on creativity will quickly discover the familiar assertion that one single definition of creativity does not exist. The numerous definitions are a result of researchers investigating the construct from different perspectives, as well as creativity corresponding with similar constructs, such as imagination, problem solving, and innovation (Treffinger, et al., 2002). Although the topic of creativity has been researched for many years, most people attribute the increased interest in creativity to J. P. Guilford's (1967) address to the American Psychological Association. In his address, Guilford called for an increase in studies examining creativity. As researchers progressively answered this call, various definitions and perspectives have emerged (Plucker, Beghetto, & Dow, 2004; Rhodes, 1961; Rubenson, 1991; Runco, 1988; Simonton, 2007; Sternberg & Lubart, 1991).

To make sense of the numerous definitions of creativity that exist, the literature has often been organized using a scheme developed by Rhodes (1961), referred to as the "Four P's," in which creativity research is classified into the categories of person, process, press, and product. Studies falling within the person category examine the personality characteristics of creative individuals (Claxton, Edwards, & Scale-Constantinou, 2006; Sternberg & Lubart, 1991; Wallace & Gruber, 1989). Research studies about creative processes, on the other hand, examine the behavior and thinking that underlie and lead to creativity (Lubart, 2001; Runco & Okuda, 1988, Runco & Chand, 1995). The press category consists of the pressures on the creative process or persons, also known as the situational and social dynamics that influence creativity (Amabile,

1989; Amabile, 1998; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013). Finally, studies grouped within the product category refer to the outcomes of creative thinking and the results of creative processes (Besemer & Treffinger, 1981; Getzels & Csikszentmihalyi, 1976; Reis & Renzulli, 1991).

As a result of the "Four Ps" scheme, definitions of creativity vary across each category (Treffinger, et al., 2002). Some definitions focus on the characteristics of a product or outcome, including an original and useful design, unique painting, novel idea, etc. (Atchley, Keeney, & Burgess, 1999; Besemer & O'Quin, 1986; Besemer & Treffinger, 1981; Hasse, 2001). Many researchers have preferred the product approach because it lends itself well to scientific measurement (Runco, 2004), as one can more objectively determine whether a product is original within a given field. This approach usually involves investigations of eminent individuals, given that they "tend to be the most productive [and] are also unambiguously creative" (Runco, 2004, p. 663). However, this approach can provide a limited view of creativity, suggesting that it is something only a genius few can achieve. On the other hand, studies that approach creativity using the person perspective define creativity in terms of certain traits or attitudes (Alamshah, 1967; Claxton, Edwards, Scale-Constantinou, 2006; Sternberg & Lubart, 1991). Historical perspectives suggest that a person might be considered creative, for example, if he/she possesses traits such as independence, sensitivity, adventurousness, curiosity, and thoughtfulness (Alamshah, 1967). Attitudes of creative people identified more recently include a willingness to take risks, experiment, tolerate ambiguity, being open to new experiences, and demonstrating resiliency (Claxton, Edwards, Scale-Constantinou, 2006; Sternberg & Lubart, 1991).

Definitions that focus on the creative process emphasize the types of thinking associated with creativity, such as fluency, originality, flexibility, and elaboration (Torrance, 1966). Another process definition considers someone creative if they have progressed through Wallas's (1926) four-step model of preparation, incubation, illumination, and verification. Creative Problem Solving (CPS) has also been studied as a creative process (Isaksen, Dorval, & Treffinger, 2011; Osborn, 1953; Parnes, 1967). The Synectics technique, a creative process developed by Bill Gordon, George Prince, and their team (Nolan, 2010) involves the use of psychological stimuli, such as imagery, emotion, and metaphors to foster creative problem solving. Finally, studies within the press category define creativity in terms of the environmental or contextual conditions that foster it (Amabile, 1989; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013). For example, an environment might be considered conducive to creativity if it uses time and space in a flexible and open manner, contains visual displays of works in progress, and provides easy access to resources, such as a wide range of materials, different media and technologies, reference resources, and interactive whiteboards (Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013). Other contextual factors that foster creativity include those in which originality and risk taking are encouraged, along with those that provide freedom for exploration and imagination, autonomy, and freedom from criticism (Amabile, 1998).

A Comprehensive Definition of Creativity

Recognizing that the disparate literature on creativity has led to "negative assumptions and characteristics held by researchers, practitioners, and laypeople," (Plucker, Beghetto, and Dow, 2004, p. 85) about the topic, some researchers have made it their purpose to synthesize the various definitions that exist in order to bring clarity to such a complex and, often confusing,

construct. Findings from a content analysis of creativity research over a three-year span indicate the most common words found in definitions of creativity are "uniqueness" and "usefulness" (Plucker, Beghetto, and Dow, 2004). In an effort to bring clarity to this complex construct, researchers applied the results of their content analysis to propose a useful definition of creativity. The researchers defined creativity as "the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel and useful* as defined within a *social context"* (Plucker, Beghetto, & Dow, 2004, p. 90). Plucker, Beghetto, and Dow's (2004) definition was used for this dissertation study because its components readily translated to an educational context, which served as the setting for the research. In sections to follow, each of the interactional components of Plucker, Beghetto, and Dow's (2004) definition (aptitude, process, environment) are examined from an educational lens.

To maintain consistency, the term "creative aptitude" was used throughout the dissertation study to refer to skills, attitudes, interests, or habits that contribute to an individual's creativity. Plucker, Beghetto, and Dow (2004) suggested a trait usually refers to a "static, innate characteristic, whereas an aptitude refers to a more dynamic characteristic or skill-set that can be influenced by experience, learning, and training" (p. 90). Much of the literature on creative people suggests they demonstrate certain aptitudes that contribute to their creative achievements (Duckworth, Peterson, Matthews, & Kelly, 2007; Simonton, 2000; Sternberg, O'Hara, & Lubart, 1997). The following aptitudes were selected because of their historical prevalence in the creativity literature. The aptitudes are grouped into cognitive and affective categories (Feist, 1998; Runco, 2004; Shephard, 2008; Starko, 2014).

Creative cognitive aptitudes are the "mental mechanisms that allow people to use their imagination and generate original ideas" (Starko, 2014, p. 104). These mental mechanisms

include problem finding (Cremin, Bernard, & Craft, 2006), generating original ideas or divergent thinking (Runco & Acar, 2012), and analyzing and evaluating the quality of those original ideas (Runco, 2014). Creative aptitudes within the affective area focus on the driving forces behind creative efforts, such as perseverance, curiosity, passion, and tolerance for ambiguity (Amabile, 1983; Lucas, Claxton, & Spencer, 2013; Runco, 2014; Sternberg, 2006). The affective characteristics "determine not so much how people are able to think, but how they choose to use their thinking, in what ways, and to what ends" (Starko, 2014, p. 110). Examining creative aptitudes in both of these areas provided a more holistic picture of how creative thinking occurs during the curriculum redesign process.

Statement of the Problem

Given that the PRD model currently lacks an extensive body of research, additional research was needed to investigate the factors that enabled faculty to think creatively when using the model to redesign a curriculum. Creativity requires risk taking and persistence against the pressures of established norms (Lucas, Claxton, & Spencer, 2013). Whether the required curricular change is substantial or minor, making any sort of change at the program level requires faculty to think beyond the current state of their program (Fowler, Macik, Sandoval, Bakenhus, MacWillie, 2016). There is risk involved when a group of faculty "think outside the box" and challenge the status quo. In an environment where established traditions are strong and reward structures discourage a focus on teaching (McLaren, 2012; Orhun, 2013), this study examined how CVM faculty demonstrated creativity when redesigning a curriculum using the PRD process, along with the environmental factors that supported or impeded this effort.

CHAPTER II

LITERATURE REVIEW

Creativity plays a major role in the advancement of civilization. Not only do creative acts benefit our culture by means of artistic expression, but creativity also serves as a springboard for innovative ideas and products in every arena from technology, education, and business, among many others (Runco, 2004). Furthermore, the increased rate of change in our society has made it much more necessary for people to possess the ability to adapt and to develop innovative approaches to solving problems (Lowry-O'Neill, 2011). In fact, "the flexibility of creative persons is what gives them the capacity to cope with the advances, opportunities, technologies, and changes that are a part of our current day-to-day lives" (Runco, 2004, p. 658). Given the countless benefits of creativity (Plucker, Beghetto, & Dow 2004; Sternberg & Lubart 1999) and the increased demands for innovative thinkers (Mumford & Licuanan, 2004), more work needs to be done to examine how creativity can be encouraged in the curriculum redesign process. Rather than focusing on students' creativity, which many studies have accomplished, this study examined how faculty demonstrated creativity as they redesigned a curriculum. In particular, this research sought evidence for creative cognitive and affective aptitudes among faculty during the PRD process and investigated how the organizational environment hindered or supported faculty creativity as they redesigned their veterinary medical education program.

Creative Cognitive Aptitudes

Much has been written about the types of thinking that lead to creativity. Most researchers suggest creativity is characterized by both originality and usefulness (Plucker, Beghetto, & Dow, 2004; Runco & Jaeger, 2012; Sternberg, 2006). Creative thinking involves

cycling through three cognitive processes: problem finding, divergent thinking, and convergent thinking (Isaksen, Dorval, & Treffinger, 2011; Parnes, 1997).

Problem finding

One aspect of creative thinking discussed in the literature is possibility thinking or the tendency to ask "what if?" questions, which is also known as problem finding (Cremin, Bernard, & Craft, 2006). Among the first researchers to investigate the concept of problem finding were Getzels and Csikszentmihalyi (1976). The researchers conducted a longitudinal study of creativity in the arts, during which they followed a group of artists throughout art school and beyond. Getzels and Csikszentmihalyi determined that the artists who emphasized problem finding rather than problem solving in their creative endeavors tended to be more successful in their artistic careers six years after graduating from art school. When people engage in possibility thinking, they shift from "what is this and what does it do?" types of questions to asking, "what can I do with this?" (Cremin, Bernard, & Craft, 2006, p. 109). Formulating questions, thinking of new problems, or viewing old problems from a new perspective has historically been considered an essential skill, perhaps even more important than solving the problem (Csikszentmihalyi, 1988; Isaksen, Dorval, & Treffinger, 2011; Osborn, 1993; Parnes, 1997). This cognitive aptitude is important when it comes to curriculum redesign because the PRD model encourages faculty to think beyond their current program and envision the possible future state of their program. Instead of focusing on how things are done now, faculty come together to think about how things could be if practical constraints did not exist. For example, a common constraint discussed by faculty involves the growing class sizes as institutions enroll increasing numbers of students (Oliff, Palacios, Johnson, & Leachman, 2013). As part of the PRD process, faculty are encouraged to look beyond these barriers and imagine how their teaching would change and how

their students would learn despite limitations in space and resources (Fowler, Macik, Sandoval, Bakenhus, MacWillie, 2016).

Divergent thinking

Divergent thinking consists of several components including fluency, or the ability to produce a large number of ideas, originality or the ability to produce ideas that are novel, flexibility or the ability to produce diverse ideas that differ in conceptual category, and elaboration or the ability to add detail to ideas (Runco & Acar, 2012). Gibson, Folley, and Park (2009) asked twenty classical music students to complete intelligence and behavioral questionnaires and participate in behavioral experiments to investigate the relationship between divergent thinking and creativity. The Remote Associates Test (Mednick, 1962) and a divergent thinking task were used to compare participants' scores on the intelligence and behavioral questionnaires with their performance on the creativity tasks. In a second experiment, researchers used infrared spectroscopy to examine a subset of the initial participants and monitor their neurological activity during a divergent thinking task. Findings from their study indicated increased frontal cortical activity, suggesting that creative individuals demonstrated enhanced divergent thinking. In a meta-analysis of 17 studies spanning a period of forty-seven years from 1958 to 2005, Kim (2008) reviewed the relationship between creative achievement and both intelligence and divergent thinking tests. The meta-analysis concluded that the relationship between divergent thinking scores and creative achievement has been shown to be higher than the relationship between intelligence tests scores and creative achievement. Given the relationship between divergent thinking and creativity, research on creative processes have focused on divergent thinking strategies, such as brainstorming techniques, as a means to

enhance creative performance (Isaksen, Dorval, & Treffinger, 2011; Osborn, 1993; Parnes, 1997; Runco & Okuda, 1987).

Convergent thinking

Critical thinking, or convergent thinking, is often described as the practical aspect of creativity because it contributes to the creation of a useful product (Baker, Rudd, & Pomeroy, 2001). While divergent thinking produces novel ideas, convergent thinking uses logic to examine those ideas and "decide what action to take or what to believe through reasonable reflective thinking" (p. 174). The cognitive process of evaluating and analyzing the ideas generated from divergent thinking is a necessary part of the creative process (Parnes, 1997). In a synthesis of the literature, Cropley (2006) examined the relationship between convergent thinking and divergent thinking and the role they play in creativity. Cropley conceptualized the relationship by using Wallas's (1926) four-stage model and proposed the addition of two stages – verification and communication. Cropley (2006) suggested knowledge plays a role in creative effort and although the generation of ideas can lead to novelty, the exploration and evaluation of those ideas through convergent thinking leads to their effectiveness, and the communication of those ideas leads to their usefulness within a context. Creativity, therefore, relies on both divergent thinking and convergent thinking. Once ideas are generated through divergent thinking, convergent thinking "makes it possible to explore, evaluate, or criticize variability and identify its effective aspects" (p. 398), resulting in both novelty and usefulness.

Creative Affective Aptitudes

One common view in cognitive psychology suggests that emotions and cognition are linked (Runco, 2004; Taylor, 2001). In the field of creativity, emotions and cognition are also entwined (Amabile, Barsade, Mueller,& Staw, 2005). Studies as early as Fromm's (1959),

Rogers's (1959), and Maslow's (1968) research on creative people identified certain affective aptitudes they held in common, such as curiosity, perseverance, and passion. The emphasis on personality and affective aptitudes continued to grow as Guilford (1967) suggested that more attention should be given to "what motivates individuals . . . and needs, interests, and attitudes that help the individuals to be productive creatively" (p. 12). Since then, research on personality or affective factors has grown. For example, in his studies of creative scientists and artists, Feist (1998) found that both groups were similar in that they possessed certain affective habits that enabled them to carry out their creative work. Among the affective aptitudes, those repeatedly discussed in the literature include courage, grit, curiosity, openness, tolerance for ambiguity, and passion (Adelson, 2003; Dacey, 1989; Feist, 1998; Lucas, Claxton, & Spencer, 2013; Sternberg, 2006; Vellerand, 2010; Zelado, et al., 2014). Indeed, the creative process is an effortful endeavor, and these affective aptitudes enable individuals to perform the necessary work involved in exploring the unknown and producing creative outcomes.

Affective aptitudes are much more difficult to evaluate than cognitive aptitudes, and higher education has been known to focus on the latter, given their more objective nature (Shephard, 2008). However, literature on creative persons has established that certain affective aptitudes contribute to the creative process (Adelson, 2003; Dacey, 1989; Feist, 1998; Lucas, Claxton, & Spencer, 2013; Sternberg, 2006; Vellerand, 2010; Zelado, et al., 2014). The following sections outline the research on various affective aptitudes and how they influence creativity.

Grit or perseverance

Creativity typically involves challenging the status quo (Adelson, 2003; Dacey, 1989; Sternberg, 2006). The inquisitive nature of creative people requires "social resilience…the

tenacity to stick with your questions, ideas, and projects even though most people cannot see the point or think you are nuts" (Claxton, Edwards, & Scale-Constantinou, 2006, p. 58). By creating something new or developing a new idea, the creator stands out from the crowd and suggests that things be done in a different manner. Sternberg (2006) even described creative people as having an oppositional mindset or the tendency to think differently than others intentionally. Fromm (1959) explained that being different and standing out can lead to social isolation, which can be challenging for people to experience. An attitude of perseverance allows one to risk the social backlash that often accompanies nonconformity and enables the individual to move forward with their creation (Starko, 2004; Torrance, 1962). Anderson (1959) described this type of aptitude as a "personal boldness to explain one's point of view and to stand for one's convictions" (p. 119). It might be easier to stop one's work when faced with rejection, but successful creative individuals find ways to convince others that their idea or product is valuable and useful (Sternberg, 2006).

Creation consists of continuous experimentation, by which a person tries something, experiences outcomes that are not ideal, and continues to refine his/her work until a quality product or idea is developed (Cropley & Urban, 2000). This entire process requires the perseverance to continue pressing on, even when efforts do not yield immediate results (Sternberg, 2006; Sternberg & Lubart, 1991). Grit "enables an individual to move beyond familiar ideas and come up with new ones" (Lucas, Claxton, & Spencer, 2013, p. 17). Oftentimes, the most creative idea is not among the first considered and, therefore, grit is required so the creative person can persist past the commonplace ideas towards more original ones. In Adelson's (2003) study of Franklin Institute Laureates, one scholar described working in his lab for 12-15 hours per day. Other participants even recalled working for years at a time

without any reward or payoff. Dacey (1989) described this form of persistence as delayed gratification, or “the willingness to endure the stress of prolonged effort so as to reap higher pleasures" (p. 33). By pressing forward, beyond the easy, obvious ideas, the creative individual holds out for the potential of developing a novel, more rewarding idea.

Research on eminent creators suggests when intelligence, or IQ, is held constant, the greatest predictor of lifetime achievement is persistence (Simonton, 1996). In one famous example, Weisberg (2006) reported on the case study of Watson and Crick’s discovery of the double helix. He described the pair’s success in identifying a model of the structure of DNA as a result of “several misdirected attempts” (Weisberg, 2006, p. 7). Described as an illogical and experimental process, Watson and Crick’s discovery demonstrates that creativity requires the persistence to test, re-test, likely make many errors, and eventually arrive at a solution. Therefore, to press on or to persist is a key characteristic of creative individuals. Duckworth, Peterson, Matthews, and Kelly’s (2007) description of successful creative people suggests that, "the gritty individual approaches achievement as a marathon; his or her advantage is stamina" (p. 1088). The creativity literature has established that this type of stamina, or grit, manifests itself in multiple ways—as stamina to push past commonplace ideas (Lucas, Claxton, & Spencer, 2013), stamina to persist beyond criticism from others (Claxton, Edwards, & Scale-Constantinou, 2006), and stamina to persevere in the face of failure (Sternberg, 2006).

Risk-taking

Risking social backlash is just one of the many hazards involved in creative work. Research on creative people has indicated that, as a group, they tend to demonstrate risk-taking behaviors and prefer trying new things (Csikszentmihalyi, 1996; Sternberg & Lubart, 1991). According to Torrance (1962), “occasional failures must be expected” when engaging in the

difficult tasks often associated with creative work (p. 195). Creative endeavors consist of experimentation and failure. Some of the most creative ideas or products were not developed on the first attempt. Simonton (1996) explained that the most successful eminent creators were often those who created many unsuccessful works. In other words, failure can lead to success, if one is willing to take the risk (Osborn, 1993). To create a successful product or idea, one must risk failure and continue to refine one's work.

Curiosity

Curiosity has been extensively mentioned in the creativity literature as a motivational force inspiring creative efforts (Runco, 2014; Selby, Shaw, & Houtz, 2005; Zelado, et al., 2014). According to Starko (2004), "creative people want to know how things work, how people think, what is out there, and how it got there" (p. 133). This type of questioning behavior has been referred to as problem finding (Cremin, Bernard, & Craft, 2006). Problem finding is the cognitive task of asking questions, while curiosity is the affective aptitude that drives such behavior. Curiosity can lead to fresh perspectives (Feist, 1998). Rather than being limited by one perspective, creative people tend to "have at their disposal a wide range of thoughts, feelings, and problem-solving strategies, the combination of which may lead to novel and useful solutions of ideas" (p. 300). This desire to approach and investigate new ideas or situations enables creative people to "think outside the box" and use their imagination to consider numerous possibilities. Creativity research has consistently demonstrated that divergent thinking is related to curiosity or openness to ideas (Dellas & Gaier, 1979; Feist, 1998; McCrae, 1987). Research indicates that exposure to diverse ideas equips people to think in varied and divergent ways, a necessary feature of creativity (Brophy, 2001; George & Zhou, 2001). Dellas and Gaier (1979) described this curious mindset as "perceptual openness" because creative people tend to

demonstrate an ability to pay attention to a wide variety of stimuli. Dacey (1989) suggested that creative people are "less defensive about accepting new information" (p. 39). By being receptive and seeing new ideas or new information in a non-threatening way, people increase the likelihood that they will experience an insight. Indeed, it is these insightful experiences that often lead to the creation of a novel product or idea (Duch, 2007).

Not only does being curious or open to new ideas relate to divergent thinking, but the exposure to new experiences also relates to higher levels of creativity (Russ, 1993). In Feist's (1998) study, the characteristic with the largest effect size when comparing creative scientists and less creative scientists was openness. Creative scientists were found to be more open to new experiences than their less creative peers. Barron and Harrington's (1981) review of creativity research described some core personality characteristics of creative individuals, such as having broad interests, self-confidence, independence of judgment, autonomy, and an attraction to complexity. Among those characteristics, having a broad range of interests was consistently found in creative people (Barron & Harrington, 1981). A more current review from Simonton (2000) also reported the tendency for creative people to have a wide variety of interests and openness to new experiences. One example of a new experience involves living abroad. Maddux and Galinsky (2009) conducted five experiments in which the link between living abroad and performance on creativity tasks was examined. In all five experiments, researchers found that people who lived abroad and were exposed to more diverse situations scored higher on creativity tasks than those who did not live abroad.

Tolerance for ambiguity

Creative people are described as embracing the unknown or the unfamiliar (Sternberg, 2006). Creative people have consistently been described in the creativity literature as having a

high tolerance for ambiguity (Dacey, 1989; Runco, 2014; Sternberg, 2006; Sternberg & Lubart, 1991). The ability to "hold a problem open and avoid coming to a conclusion too early" (Russ, 1993, p. 62) is what enables individuals to solve problems in creative ways. One must be comfortable with unclear guidelines or vague situations because most real-world problems are not well-defined (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). People who score higher on tests of originality appear to be more tolerant of ambiguity and "feel less need for discipline and orderliness" (Torrance, 1962, p. 66).

Passion

Creative people tend to have passion towards their creative efforts (Amabile, 1983). Indeed, it is the "obsessive passion" that enables the individual to display rigid persistence, another aptitude associated with creativity (Vellerand, 2010). Csikszentmihalyi (1988) explained that cognitive achievements are not explained by cognitive capacity alone; the person must also find those cognitive operations intrinsically rewarding in order to engage in creative work. When passion and work align, a person can experience flow, which is described as a state creative people experience involving deep enjoyment (Amabile, 1989; Csikszentmihalyi, 1990). This deep enjoyment or passion provides an optimal experience in which people can maintain their attention for long periods of time.

Creativity-Fostering Environments

Amabile (1989) was among the first researchers to study the impact that an environment can have on fostering creativity. The main assumption in much of the research on environmental factors suggests that psychological phenomena, such as perceptions of creativity support, will affect creative behavior (Amabile, 1996). Amabile's (1996) componential model of creativity and innovation outlined three broad factors that influence creativity in an organization. The first

factor, organizational motivation to innovate, refers to an organization's general orientation toward creativity and support of such thinking. The second factor, resources, involves the level and type of aid that an organization provides to encourage creativity thinking. The third factor, management practices, considers the degree to which employees are allowed autonomy in their work, capacity for challenging work, interesting work, and the development of diverse working groups.

Other models focusing on environmental factors, such as the KEYS model, also suggest that an individual's perceptions about the level of support they receive for creativity, affects their creativity (Pierce Gardner, Cummings, & Dunham, 1989). Self-report measures have been created to measure individuals' perceptions about their work environments. As a result, individuals have reported their perceptions on their supervisors, colleagues, and other leaders in the organization encourage them to take risks in their work. While most studies in the area of creativity-fostering environments have focused on industry and business, the focus of this study was to investigate CVM faculty members' perceptions' of the level and type of support for creativity in their department and college.

Creativity Research in Higher Education

Faculty creativity

A review of the literature suggests that most efforts associated with enhancing creativity in higher education have focused on enhancing students' skills (Aghayere et al., 2012; Cheung, Roskams, & Fisher, 2006; Costantino, Kellam, Cramond, & Crowder, 2010; Cropley & Cropley, 2000; Jankowska & Atlay, 2008; Liu, Lin, Jian, & Liou, 2012; West, Tateishi, Wright, & Fonoimoana, 2012; Zundans-Fraser & Bain, 2016). Little research has been conducted to

consider the role that higher education institutions play in fostering a culture of creativity amongst faculty in the area of curricular reform. As Philip (2013) explained,

> administrative systems, which out of necessity must focus on order and accountability, may not be flexible enough to cope with new pedagogical visions; and pressure for greater regulation, transparency and auditing of teaching practice create tensions, all of which inhibit creativity and create a culture with little tolerance or room for risk and failure." (p. 364)

It is quite common to hear among the educational discourse that high-stakes, evaluative environments are accompanied by an increased fear and anxiety from faculty (Shabani, 2012). This fear of failure or of being wrong can influence faculty members' willingness to take risks and, therefore, decreases the likelihood that they will demonstrate the courage to engage in creative efforts (Davis, 1999). Smith (2011) examined the role that the institution can play in cultivating a culture of educational creativity for faculty members. The study found that reward and recognition, along with institutional support, were drivers that encouraged faculty to be more creative. Although studies have examined faculty members' perspectives on creativity (e.g., Kleiman, 2008; O'Neill, 2011), few have investigated methods for enhancing their creativity in the area of curricular reform. One study discussed ways in which educators can use their creativity and imagination to design curricula in their disciplines (Donnelly, 2004). The Donnelly (2004) study aligned in several ways with the current research study, which sought to gain insight into how faculty members demonstrated creative thinking during the program redesign process. First, Donnelly (2004) examined the role that tutors or faculty developers play in enhancing faculty members' creativity. Second, Donnelly (2004) discussed encouraging faculty to creatively design curricula. However, the Donnelly's (2004) research was based in Ireland,

and the current research study investigated U.S. faculty members' creative thinking as they redesign curricula utilizing the PRD process and how their environment hindered or supported these efforts.

Purpose of the Study

The research study investigated the process used by a college at a large Tier 1 research university to approach existing problems within their curriculum and develop creative solutions to those problems. The study aimed to gain an in-depth understanding of how faculty demonstrated creativity during the curriculum redesign process and how the context or organization influenced their creativity throughout the curriculum redesign process.

Research Questions

The following research questions guided the study: 1) Which components of creative thinking are evident during the steps of the Program Redesign Process (PRD)? and 2) In what ways does the environment or context influence CVM faculty members' creativity throughout the PRD process?

CHAPTER III

METHOD

Theoretical Framework

The proposed study was grounded in a constructivist paradigm, which suggests the researcher plays a role in the construction and interpretation of data and participants create their own realities (Charmaz, 2014). Specifically, social constructivism views "knowing and learning as embedded in social life" (p. 14). The current study focused on how faculty demonstrated creativity as they redesigned a program and how their social world or context was relevant to their experiences. The researcher examined CVM faculty members' accounts of their experiences throughout the curriculum redesign process and their impressions of the environmental factors that hindered or supported their creative thinking throughout the curriculum redesign process.

The researcher utilized Amabile's organizational creativity framework (1996) to analyze the data and determine the environmental factors that influenced the creative effort of curriculum redesign. Amabile suggested the following dimensions influence creativity: Encouragement of creativity, autonomy or freedom, resources, pressures, and organizational impediments to creativity. The researcher used these dimensions to guide the qualitative data analysis.

Study Design

The researcher utilized a qualitative explanatory case study methodology (Yin, 1994). The researcher selected the explanatory method because the study aimed to examine evidence of a phenomenon (creative thinking) throughout a curriculum redesign process and the environmental factors that impacted it. A case, or unit of analysis, is defined as a phenomenon occurring within a specific context (Baxter & Jack, 2008). The curriculum redesign process under investigation was

facilitated by a group of faculty members who teach in the veterinary medical education program. As part of the curriculum redesign process, groups were formed to include faculty diverse in their professional rank and disciplinary expertise, and efforts were made to continually involve these faculty in all aspects of the redesign process. The case was bound by activity in that the researcher only invited faculty to participate in the study if 1) they participated in the various program redesign activities and/or 2) they had experience with working in the organizational environment of the CVM. The study sought to examine the components of and the environmental factors that impacted creative thinking throughout the steps of the curriculum redesign process in the veterinary medical education program at a large research university. As such, the unit of analysis was creative thinking within the context of a curriculum redesign process.

Setting

The study took place at Texas A&M University, a Tier I research university in the southern United States. The researcher distributed an online survey to all faculty from the College of Veterinary Medicine and Biomedical Sciences (CVM). The survey was created and distributed using an online survey platform called Qualtrics©. Survey participants utilized their own electronic devices to complete the survey. The researcher also conducted a focus group discussion with faculty members and two individual interviews with administrators from the veterinary medical education program within the CVM, which recently underwent a major curriculum redesign. Two recruitment scripts were utilized to invite participants to the study, one for the survey (appendix A) and one for the focus group and individual interviews (appendix B). The focus group session took place in a conference room at the Veterinary and Biomedical Education Complex (VBEC) at Texas A&M University. The individual interviews took place in each administrator's office at the VBEC.

Participants

Participants were selected using purposive sampling, which aims to provide information-richness and involves the selection of individuals or groups who possess knowledge and experience regarding a phenomenon of interest (Cresswell, 2011). Participants recruited for this study consisted of all faculty from the College of Veterinary Medicine and Biomedical Sciences (CVM) at Texas A&M University because they have first-hand experience with the organizational environment in which they work, a phenomenon of interest in this study. Additionally, seven faculty members and two administrators from the veterinary medical education program within the college participated in a focus group discussion and individual interviews because they have knowledge about and experience with the veterinary curriculum redesign process. Participants were selected based on the following inclusion and exclusion criteria. To participate in the Creative Environment Online Survey, individuals had to be faculty members employed by the CVM. To participate in the focus group or individual interviews, faculty members must have taught in the program and/or participated throughout the various stages of the program redesign process within the college. Participation was defined as attendance at one or more of the redesign meetings or events. Faculty who did not participate in the program redesign process or who did not teach in the program at the time of the study were not be invited to participate in the study.

Seven faculty members participated in the focus group session, two of which are males and five females. Focus group participants varied in professional rank, and included one clinical professor, two clinical associate professors, one clinical assistant professor, and three associate professors. One faculty member declined to participate in the focus group session due to limited scheduling availability. The two individual interview participants are each female. The researcher did not collect gender and ethnicity information as part of the online survey. Survey demographic

questions requested the participant's department, professional rank, and veterinary program teaching status. The department options included Veterinary Integrative Biosciences (VIBS), Veterinary Pathobiology (VTPB), Veterinary Physiology and Pharmacology (VTPP), Small Animal Clinical Sciences (VSCS), Large Animal Clinical Sciences (VLCS), and a text entry "other" option. From the total of survey respondents (n=57), one chose the "other" option and indicated the department as the Professional Programs Office (PPO). Figure 1 illustrates a breakdown of survey respondents by department, and Figure 2 shows the number of survey respondents by professional rank. Survey respondents also indicated if they teach in the veterinary medical education program in the college, and 49 said yes and eight said no.

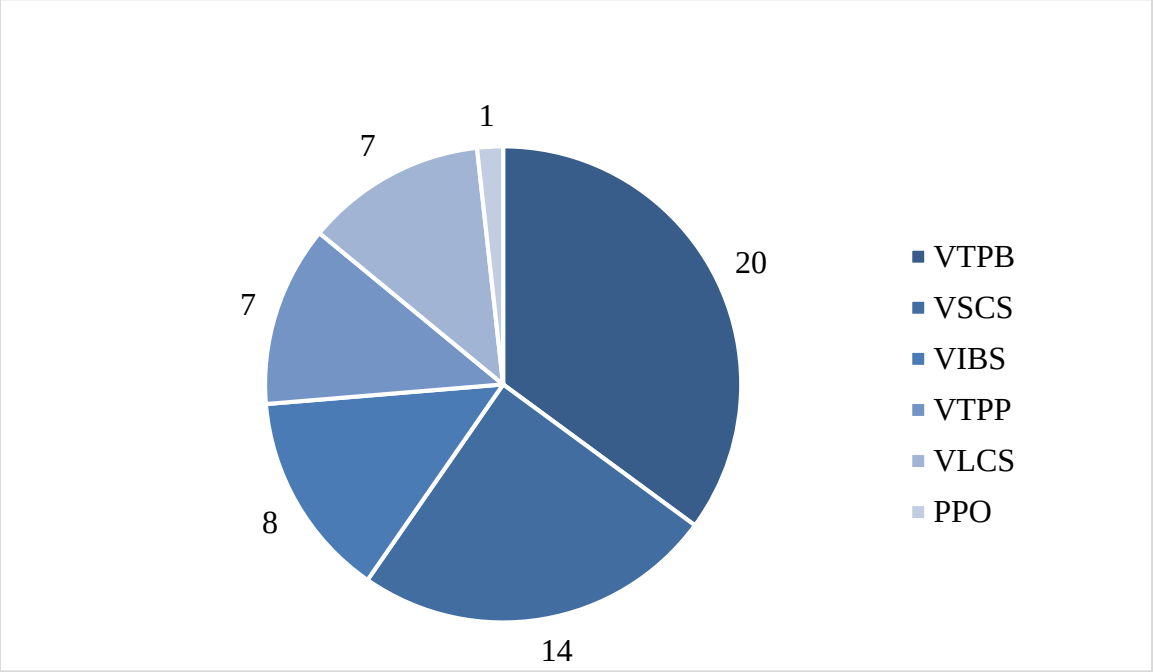

Figure 1. Survey respondents by department.

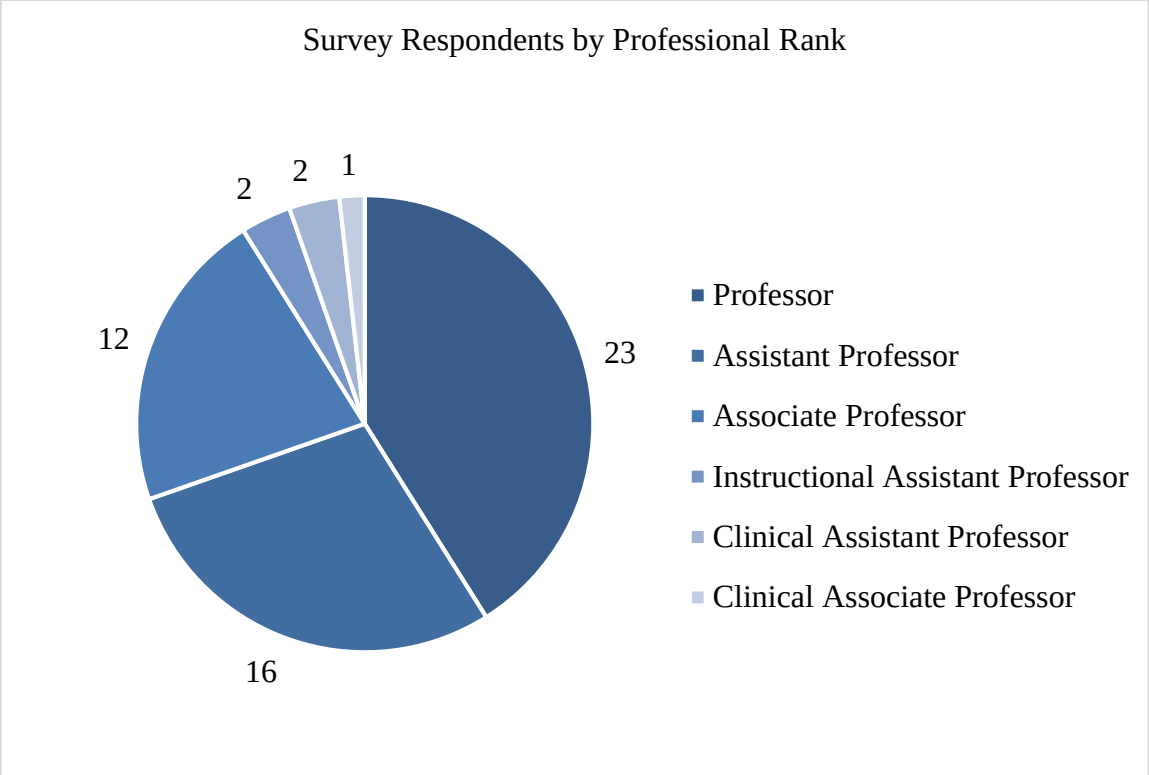

Figure 2. Survey respondents by professional rank.

Procedures

Data collection

The researcher collected data about the college environment by adapting Amabile's (1996) instrument *KEYS: Assessing the Climate for Creativity*. The researcher created an online version of the modified KEYS instrument using the Qualtrics© survey platform (see Appendix E for an overview of the modified instrument). Amabile developed the KEYS as a workplace inventory to assess the amount of perceived organizational support for creativity. Given the researcher's interest in determining the environmental factors that impacted the curriculum redesign effort in the college, the Creative Environment Online Survey served as an exploratory tool for gauging the level of organizational support for creativity at the CVM and for supporting the primary source of qualitative data collection. The researcher recruited survey participants via electronic mail using the

college-wide faculty listserv (see appendix A for the survey recruitment script). Survey participants were informed that their responses would be anonymous.

The researcher collected data relevant to the curriculum redesign process through one semi-structured focus group of seven faculty participants (Yin, 1994). The researcher utilized the focus group method to collect data for the current study because faculty who participated in the curriculum redesign process were already accustomed to collaboration and dialogue in the form of data analysis teams and course design working groups. College administrators offer a different perspective and can provide a global view of college activities and leadership efforts. The researcher conducted individual interviews with two administrators in the college in an effort to gain insight into leadership aspects of the process and to encourage an open dialogue from a supervisory frame of reference. The focus group took place in a conference room at the VBEC, the researcher provided lunch for participants, and the session lasted one hour. The two individual interviews took place in each administrator's office at the VBEC and each lasted one hour. Upon commencing the focus group and each individual interview, the researcher reviewed the study consent form and informed participants that their responses would be confidential. An interview protocol (appendix C) was used to facilitate the faculty focus group and an administrator interview protocol (appendix D) was used to guide the administrator interviews. In addition to taking notes during the focus group session and individual interviews, the researcher audio recorded each session, and later transcribed the recordings using the Express Scribe© software program.

The goal of the study and each interview question was to encourage participants to share their knowledge of and experiences with the curriculum redesign process, the creative process, and the surrounding environment. This study was not intended to result in generalizable findings. Instead, the goal of the study was to generate data for the purpose of explanation-building. The

researcher sought to collect case study data to explain the phenomenon of creativity within the curriculum redesign process. Throughout each interview, participants were encouraged to describe their experiences in their own words and, if necessary, deviate from the interview protocol, so the researcher could understand the specific circumstances under investigation, making the interviews both situational and conditional (Rubin & Rubin, 2005).

Documentary information was also collected and included the curriculum framework, which detailed the new courses in the three pre-clinical years of the curriculum and outlined differences between the previous curriculum and the redesigned curriculum. The curriculum redesign process involved various group meetings in which faculty achieved the goals of each step of the PRD process. Therefore, meeting minutes were also collected to augment evidence gathered from the individual interviews (Yin, 1994).

Data Analyses

To determine if the researcher could compare differences in means across the Creative Online Survey items, an independent researcher conducted a power analysis (Viechtbauer et al., 2015) and found that at a 95% confidence interval, comparisons could be made across mean differences for the survey items. The dissertation study researcher utilized the Qualtrics© program to calculate means and standard deviations for each item of the Creative Online Survey, and results are reported in Chapter IV.

Theoretical propositions were used as the general method for analyzing focus group and interview data (Yin, 1994). The following theoretical propositions guided the case study analysis: 1) CVM faculty members use creative thinking when redesigning a program and 2) the surrounding environment influences CVM faculty members' creative thinking as they redesign a program. Upon transcription of each interview recording, the researcher conducted line-by-line open coding

(Saldana, 2016). Each time the researcher analyzed the interview data, patterns were determined, explanations built, and logic models used to establish relationships among the concepts (Yin, 1994).

The researcher also employed document analyses to support and contextualize data gathered from the individual and focus group interviews (Bowen, 2009). The curriculum framework document, which compared the old and new curricula, was analyzed to, "provide a means of tracking change and development" (p. 30). This study aimed to identify characteristics of creative thinking in the context of a major change initiative and, therefore, analyzing the curriculum framework document augmented interview data to confirm a change initiative did indeed occur within the college. Both the curriculum framework and PRD process meeting notes were analyzed using the interview technique (O'Leary, 2014). The interview technique involves asking questions and highlighting the answers within texts. The researcher asked the following questions: 1) What changes were made to the curriculum? 2) What characteristics of creative thinking were present throughout the curriculum redesign process? and 3) How did the environment influence CVM faculty members' experiences throughout the curriculum redesign process? As answers were highlighted in the texts, the researcher used open coding and identified patterns among the highlighted data.

Upon initial analysis of interview data using theoretical propositions (Yin, 19994) and documents using the interview technique (O'Leary, 2014), the researcher grouped the open codes into sub-categories (Saldana, 2016). Finally, sub-categories were grouped into major categories using Amabile's (1996) contextual theory of organizational creativity as a framework. Appendix F lists the open codes, associated sub-categories, and major categories.

Researcher's Positionality

As a consultant to the curriculum redesign process within the program under study, the researcher possessed a high level of familiarity with and commitment to the veterinary medical education program, its curriculum, and its faculty. This knowledge and experience enabled the researcher to use her expertise in making informed decisions about study recruitment, document collection, and interview facilitation. Additionally, established relationships with program faculty increased the sense of trust between the researcher and participants. Being an active participant and facilitator of the curricular change process in the program, however, meant that the researcher had to make a concerted effort to reduce bias. Several strategies were utilized to decrease the influence of bias in the study. First, the researcher intentionally selected participants who were historically critical of the curriculum redesign initiative to encourage the sharing of diverse perspectives. Second, data analysis findings were shared with participants for confirmation and with other external researchers for input. As someone who values and seeks opportunities for change and creativity, the researcher likely influenced the atmosphere and culture surrounding the curriculum redesign initiative. As an active participant, the researcher also reflected on the process through use of a reflective journal to capture thoughts, reactions, and plans regarding creative thinking in curriculum redesign.

Evaluative Criteria

Trustworthiness

Guba and Lincoln's (1989) criteria for judging the quality of constructivist evaluation can be used as guidelines for determining the quality of a research study. While the criteria of internal validity, external validity, reliability, and objectivity are used in positivist paradigm studies, trustworthiness criteria are used in constructivist paradigm studies as a parallel to the

positivist criteria (Guba, 2011). For the current study, which utilizes a constructivist paradigm, the researcher used the following evaluative criteria to establish trustworthiness: 1) credibility, or confidence in the "truth" of the findings, and 2) confirmability, or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest. The researcher also used Lincoln's (1995) criteria to enhance the quality of the research. In an effort to increase credibility, the researcher conducted member checks by sharing interpretations and conclusions of the data analysis with study participants. Research, according to Lincoln (1995), is a community project and, therefore, the participants had a voice in the analysis of data. Once data analysis was complete, a report of the findings was sent to participants with instructions to send corrections or clarifications to the researcher by a given deadline. An audit trail was completed to organize the components of this study and enhance credibility. To meet the criteria of confirmability, the researcher used a journal throughout the research study to reflect on the research process, the researcher's biases, and researcher's perspective. The researcher's positionality was included in this paper to "come clean" about the author's stance on issues discussed in the manuscript (Lincoln, 1995, p. 280). Having spent two years working alongside the study participants on the curriculum redesign initiative, the researcher established a sense of trust and mutuality, also known as reciprocity, another of Lincoln's criteria for evaluating the quality of research.

Authenticity

Authenticity criteria pertain to establishing rigor in research studies that utilize the constructivist paradigm (Guba & Lincoln, 1989). As such, the authenticity criteria can be used to assess the quality of the current study. The criteria of fairness involves the extent to which participants' unique constructions and perspectives are pursued and represented in a balanced

manner, and the criteria of catalytic authenticity involves the extent to which the research stimulates action on the part of participants. The current study can meet the criteria of fairness because the researcher made a concerted effort at recruiting participants with diverse perspectives and backgrounds. With expertise in the area of dialogue facilitation, the researcher also facilitated the focus group session in such a way that all participants had the opportunity to have their voices heard and represented in the data. The study can meet the criteria of catalytic authenticity because both faculty and administrators who participated in the research study remain involved in the veterinary program, and findings from this study can inform their efforts as they regularly assess and revise the curriculum. Study findings offer insight into the organizational factors that support creativity in curriculum redesign, which study participants can utilize as they lead other creative endeavors in the college.

Limitations of the Study

The study had several limitations. First, the Program (Re)Design Model (Fowler, Macik, Turner, & Hohenstein, 2015) is in its infancy, resulting in limited research on the model. To date, there are 17 publications in the form of research papers, conference proceedings, and posters on the Program (Re)Design Model. Second, due to the model's recent development, it is currently being applied at one institution, thus limiting the scope of this study. Third, using the review of the literature, the researcher created theoretical propositions through which the phenomenon was examined. Utilizing a deductive approach, through the creation of theoretical propositions and the testing of those propositions against the data, the researcher might not have been open to the possibility that study findings diverged from existing theory. Finally, given that study participants recalled their past experiences with the curriculum redesign process, the data had the

potential to be distorted. However, meeting notes were captured throughout the process and served to establish an accurate, first-hand account of events.

CHAPTER IV

RESULTS

Appendix F summarizes the results of the open coding analysis of the individual and focus group interviews, meeting notes, and the new curriculum framework. Analysis resulted in 24 sub-categories and 10 major categories.

Figure 3 represents the resulting major categories organized as an adaptation to Amabile's (1996) framework. For the purposes of this study, the outcome of the creative process is the newly designed curriculum within the veterinary medical education program, as well as creative efforts associated with teaching in the new curriculum. Several environmental or organizational factors influenced the creative outcome, and those are depicted in the figure. Within each dimension, major categories are depicted to represent the environmental and personal factors that impacted the creative effort of curriculum redesign within the program. The major categories of external environment, affective attributes, and process byproduct also impacted the creative effort, but did not fit with Amabile's original framework. Therefore, the model was adapted to include these additional factors. The "stimulant" factors (+) are those positively associated with the creative effort, whereas, the "obstacle" factors (-) are those predicted to be negatively related to creativity.

The following sections describe the major findings of this study. Curriculum design processes typically recommend beginning with the end in mind. Therefore, the first category presented relates to the results, or the creative outcomes, of the PRD process. Then, external factors that inspired or drove the curriculum redesign process in the college are discussed.

Finally, the remaining categories describe the stimulant and obstacle factors that impacted the creative outcome.

Creative Outcomes

Several aspects of the curriculum redesign process were highlighted as important mechanisms for driving curricular change in the veterinary medical education program. At the CVM, a core group of faculty and staff, known as the Curriculum Review Planning Team (CRPT) facilitated the eight-step Program (Re)Design process (see Figure 4 for a review of the PRD steps). Interview data emphasized the importance of adhering to a structured and comprehensive process. More specifically, college leaders and faculty expressed appreciation for the comprehensive nature of the data collection phase of the process, as well as the boot camp sessions that were utilized to examine existing course content. Stakeholder data served as a major motivating factor throughout the curriculum redesign. Findings from the individual administrator interviews revealed faculty were more willing to consider changes and support curricular decisions after recognizing the proposed curricular changes stemmed from stakeholder data. One college leader suggested she felt naïve about the process and did not realize how comprehensive the data collection phase would be. She acknowledged the amount and quality of data collected was a major reason faculty were willing to support the proposed curricular changes. Data from employers and former students, for example, resulted in the addition of professional skills learning in the new curriculum. Professional skills, such as communication and ethical decision-making, were among some of the skills identified as gaps in veterinary graduates' skillsets. As such, new courses and existing courses were designed to include teaching of these professional skills in an intentional and stepwise manner throughout the program. Furthermore, student data collected as part of the curriculum redesign process revealed the most

and least effective courses in the program, which prompted faculty to examine course content in a more intentional manner.

Faculty boot camps were utilized as one of the mechanisms for examining existing course content and determining the content to be included in the new curriculum. Veterinary practitioners worked alongside program faculty to evaluate course content. Boot camp groups sorted existing course content and categorized it as core or required for all students, core for specific species tracks, and elective content. Results from the current research study revealed that faculty appreciated the boot camp sessions and enjoyed learning more about the curriculum. As one study participant explained when discussing the boot camp sessions, "as a person new to the curriculum, that's actually where I got most of my information about what is taught and who teaches it." Prior to the curriculum redesign initiative, many faculty in the program were not aware of the content being taught in other courses. This process enabled faculty to become familiar with each other's teaching and, thereby, reduce the likelihood for unnecessary redundancies and gaps in course content throughout the program.

As part of the boot camp sessions, study participants also expressed appreciation for the opportunity to work alongside practitioners to ensure the content in the new curriculum would be clinically relevant. As one study participant explained,

> If you're a boarded internist and you think that a disease is cool, it probably shouldn't be in here [the new curriculum]. As a specialist, you might not be wowed by woody tongue, and you only think some bizarre renal tubular acidosis is cool. So, if you're board certified and something excites you, it probably doesn't need to be in here.

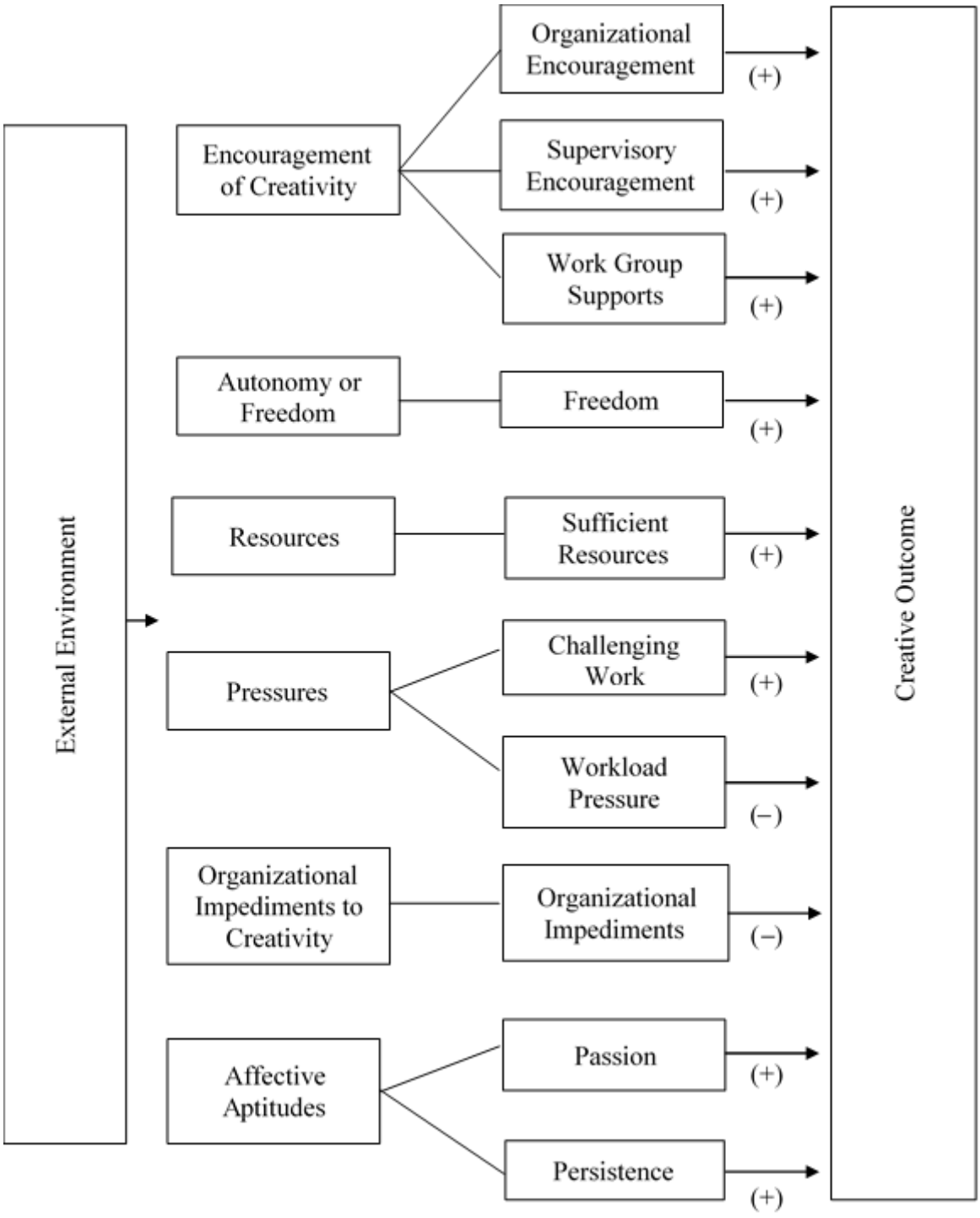

Figure 3. Organizational support for creativity in curriculum redesign. Adapted with permission from the Academy of Management. Amabile, T. (1996). Assessing the work environment for creativity. *The Academy of Management Journal*, *39*(5), 1154-1184.

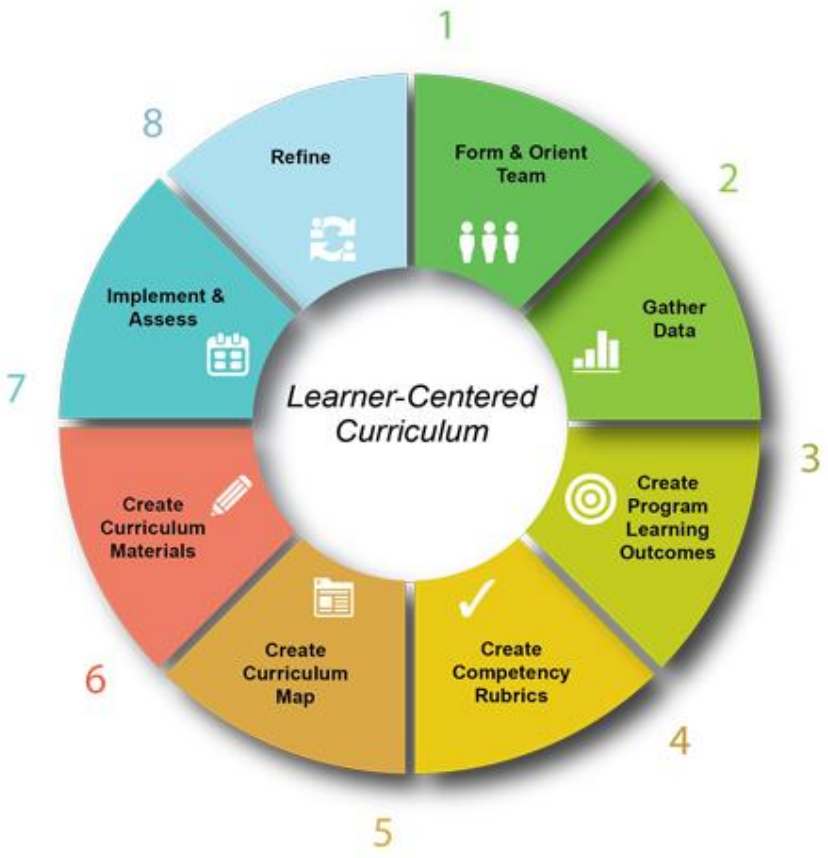

Figure 4. Reprinted with permission from Fowler, D. (2018). *Program (re)design*. Retrieved March 30, 2018, from http://cte.tamu.edu/Faculty-Teaching-Resource/Program-ReDesign

Historically, most faculty have been solely responsible for determining the content taught in their courses. Through the boot camp sessions, however, veterinary practitioners collaborated with the faculty to examine course content. Rather than specialists making decisions about content in isolation, veterinary practitioners helped to ensure the content would be relevant for the veterinary graduate.

The new curriculum

Study findings not only highlighted aspects of the PRD process that effectively facilitated the curricular change effort, but they also revealed instances where creativity was present throughout the PRD process. The foremost creative outcome of the curriculum redesign process

in the college under study was the redesigned curriculum. The redesigned curriculum was both novel (as evidenced by the creation of new student learning experiences) and useful (as evidenced by its implementation). An analysis of the new curriculum framework (see Appendix E for an example), outlined changes made to the existing curriculum. Changes included modifications to existing courses through reduced or increased credit hours, elimination of content, and reorganization of content. New courses were also proposed to include a six-semester course series titled "Professional and Clinical Skills." This new course series aims to encourage the professional skills identified as lacking from the data collection phase and to integrate content across courses to enhance student learning in various contexts beyond the typical siloes of foundation science and medicine courses. Another set of new courses, "Integrated Animal Care" for small and large animals were proposed to include content necessary for the general care of healthy animals, such as nutrition, husbandry, and preventative care and wellness. Appendix G summarizes course descriptions for these new courses. Keeping the end goal in mind of graduating a mixed animal practitioner, curricular changes aimed to foster the knowledge and skills necessary for students to succeed upon commencing their veterinary career.

Changes to the veterinary medical education curriculum went beyond modifications to course content. During the data analysis phase of the process, faculty discussed student data, which revealed students' desire for more active learning experiences in the curriculum. Study participants emphasized the increase in innovative teaching approaches as a result of such conversations during the curriculum redesign process. At the CVM Teaching Showcase, a college-level conference on teaching, an increase in innovative teaching approaches that promote active learning were observed. Faculty focus group data revealed instructors in the curriculum have intentionally embedded more active learning and case-based teaching in their courses to

provide students with opportunities to apply what they are learning. Rather than these approaches occurring intermittently, faculty are now more intentional about including these activities throughout all program years. Additionally, new courses have encouraged the intentional integration of course content across courses within the same program year and in different program years. As part of the curriculum redesign process, first-year course coordinators met to discuss ways in which their course content could be applied in the Professional and Clinical Skills course to allow students the opportunity to apply and integrate foundation science material. In these meetings, faculty were willing to rearrange their course content to allow for better sequencing across courses, and these changes resulted in the weekly alignment of course content.

Study participants also suggested there has been an increase in Scholarship of Teaching and Learning (SoTL) projects as a result of the curriculum redesign process. SoTL refers to scholarly inquiry about student learning which informs the practice of teaching. Findings from the focus group and individual interviews indicated that as faculty learned about their colleagues' courses and interests, collaborations across departments formed and new SoTL projects resulted. These collaborations encouraged foundation science faculty to work alongside clinical science faculty on research projects that not only enhance teaching in all years of the curriculum, but also support faculty research efforts. College leaders have verbalized their support for SoTL projects during faculty evaluations, and the emphasis on teaching has encouraged more research activity from faculty who normally might not contribute. Dissemination avenues, such as the CVM Teaching Showcase, have also enabled faculty to present their findings in a safe environment. Faculty are encouraged to present at national conferences, and the college has witnessed an increase in the number of proposed abstracts and manuscripts related to teaching and learning.

As the old curriculum is phased out, this has also provided faculty with the opportunity to conduct pre- and post- assessments to compare former and new teaching methods. Conversations initiated during the curriculum redesign process have sparked an interest in pedagogy across more faculty, and study participants suggested these changes have promoted a culture across the college that values teaching.

Creative cognitive and affective aptitudes

In addition to changes evident in the curriculum and in teaching strategies, focus group and interview data revealed multiple instances of creative cognitive aptitudes and creative affective aptitudes throughout the curriculum redesign process. In describing their thinking and behaviors throughout the redesign process, study participants used words such as "openness," "problem solving," "flexibility," "experimentation," and "visioning," and "brainstorming." Study participants described affective aptitudes that relate to creativity, such as passion and persistence.

Passion. Focus group and interview data supported the notion that passion is a motivational force behind creative efforts. As the faculty engaged in the curriculum redesign initiative, their passion for students and student learning was discussed repeatedly. Although the curriculum redesign process was challenging, faculty felt that maintaining a focus on the overall goal of improving student learning helped them initiate and continue the redesign effort. Findings revealed a passion for teaching as faculty discussed their ability to implement new and innovative teaching strategies in the curriculum. Faculty reported feelings of excitement as they recalled instances of idea sharing that resulted from the course design working groups. Ideas were actualized in the college-wide Teaching Showcase where faculty demonstrated their passion for education as they shared teaching innovations with colleagues. When discussing the culture of the college, administrators also highlighted the passion demonstrated by the faculty.

As one administrator recalled, “I am amazed by the commitment of the teaching faculty here. I think that the faculty here are so passionate about teaching students.” This passion for students and education appears to be a major motivating factor for faculty as they engaged in the creative effort of redesigning their program.

Persistence. Findings suggest another factor that contributed to the creative effort was the amount of persistence demonstrated by the faculty and the CRPT. Study participants described the curriculum redesign process as challenging and time-consuming, and without persistence, the process would not have resulted in data-driven change. The data collection and analysis alone took several months and people to complete. Study participants recalled the number of hours and resources involved in the process and suggested that proceeding through all steps of the curriculum redesign process required a significant amount of persistence. Two administrators specifically mentioned the CRPT as a group of people who demonstrated persistence, especially when “they got beat up a little bit from the faculty,” as they facilitated the redesign effort. Faculty recognized how important it was for the program to have a core group of people such as the CRPT who could “do all of the dirty work,” and welcome both positive and negative comments from stakeholders. The CRPT’s persistence and support enabled faculty to do the work of creatively designing courses without having to be concerned about maintain meeting notes, collecting documents and materials, or planning meetings. Study findings suggest that persistence, demonstrated on both the part of the faculty and those facilitating the PRD process, stimulated the long-term creative effort of curriculum redesign in the college. Focus group and interview data suggests that creativity was evident throughout, and as a result of, the PRD process. The following sections discuss factors that contributed to the creative outcomes.

External Environment

Programs have various reasons for commencing a curriculum redesign process. Study participants discussed several factors that motivated CVM faculty to review the existing curriculum and propose changes, one of which is not a part of Amabile's (1996) model for organizational creativity. Study participants emphasized the external environment, including national and institutional factors, as a major impetus for curricular change and creativity. One major reason leadership in the college was motivated to change involved an upcoming accreditation visit. The national organization, which oversees veterinary medical education curricula, has curricular standards that must be met for a program to be accredited. As such, the program under study prepared to review their curriculum, which had not been reviewed in its entirety since the previous accreditation visit ten years prior. Leadership was motivated to change due to the accreditation visit, but faculty also felt, "it was time." National conversations in veterinary medical education have emphasized the need to re-examine teaching practices. Following changes in medical education, veterinary medicine has felt the pressure to "catch up," and consider new and more effective ways to enhance student learning. These national conversations and focus on student learning have prompted many veterinary medical education programs to review their curricula. Beyond the national environment, the culture at the university serving as the context for this study encourages teaching excellence and high-impact learning, which also served to motivate college administrators to redesign the veterinary curriculum.

Encouragement of Creativity

Organizational encouragement

When discussing factors that contributed to their creativity and to the curriculum redesign process, study participants emphasized the surrounding college or organizational culture. Study

findings indicate the college supports teaching and promotes excellence in all areas, resulting in an atmosphere that encourages faculty to innovate with their teaching. One study participant explained, “The other thing that I think is a huge contextual factor is the emphasis on teaching in this college. I think we value it and people are committed to it. It’s always shocking to me how many extra hours [faculty] are willing to put in outside of the curriculum for the students.” Participants suggested many of their innovative teaching efforts stem from a perceived sense of support from the college, which encourages them to take risks and not fear failure. Additionally, the college recently opened a new educational complex, which participants suggested has contributed to a culture focused on education and innovation. According to college leaders, the new building has enabled the incorporation of new teaching methods, such as communications training, clinical skills training, and active learning. Laboratory and classroom spaces encourage technology-enhanced teaching as well as a collaborative atmosphere. Initially, the building presented some challenges, but the resulting changes were generally viewed as positive. From new physical spaces to a college culture focused on teaching and educational excellence, there is evidence to suggest the organizational environment encouraged curricular change and creativity.

Results from the Creative Environment Online Survey also identified characteristics of the college culture that encouraged curricular creativity. Using a 4-point rating scale (where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree), survey respondents (n = 57) answered a series of questions assessing the amount of perceived organizational support for creativity. Faculty from the five departments and the Professional Programs Office in the college responded to the questionnaire (see Figure 1 and Figure 2 for a breakdown of survey respondents by department and professional rank). Table 1 summarizes descriptive statistics for each survey item. Items with the highest reported means included those related to the level of perceived

challenge and importance for work efforts. Items with the lowest means were those associate with perceived support received from leaders in the college and opportunities for recognition for creative work. While focus group participants reported a high level of perceived support in their discussions about college leadership, survey respondents reported lower perceived support from leaders in the organization. One possible explanation for these results is that focus group participants specifically discussed the role of associate deans and the dean of the college, while survey respondents might have been referring to other immediate leaders, such as department heads. One recommendation for future investigation would be to examine the role department heads play in establishing a culture of creativity. In general, survey respondents perceived a collaborative atmosphere with an active flow of ideas, which supports focus group findings.

Table 1

Results of Creative Environment Online Survey

Item	*n*	*M*	SD	Min	Max
I feel that I am working on important projects	57	3.44	0.56	2.00	4.00
The tasks in my work are challenging	57	3.49	0.60	2.00	4.00
In this organization, there is a lively and active flow of ideas	56	3.07	0.75	1.00	4.00
There is generally a cooperative and collaborative atmosphere in this organization	56	3.05	0.83	1.00	4.00
People are recognized for creative work in this organization	57	2.86	0.76	1.00	4.00
New ideas are encouraged in this organization	57	3.07	0.79	1.00	4.00
People are encouraged to solve problems creatively in this organization	57	2.96	0.77	1.00	4.00
I feel that leaders in the organization are enthusiastic about my project(s)	57	2.67	0.92	1.00	4.00
In my daily work environment, I feel a sense of control over my own work and ideas	57	3.04	0.82	1.00	4.00

Table 1 Continued

Results of Creative Environment Online Survey

Item	*n*	*M*	SD	Min	Max
Ideas are judged fairly in this organization	56	2.84	0.70	1.00	4.00
I feel challenged by the work I am currently doing	56	3.38	0.67	2.00	4.00
The tasks in my work call out to the best in me	56	3.25	0.69	2.00	4.00
This organization has a nurturing environment	56	2.73	0.92	1.00	4.00
There is an open atmosphere in this organization	56	2.70	0.90	1.00	4.00
This organization has a good mechanism for encouraging and developing creative ideas	55	2.69	0.85	1.00	4.00
People are rewarded for creative work in this organization	56	2.77	0.80	1.00	4.00
I am satisfied with the level of creativity called for in my daily work	56	3.16	0.62	2.00	4.00

Focus group and interview participants repeatedly mentioned the role of college culture in the success of the curriculum redesign initiative and in their ability to think creatively as they designed courses. While the survey did not specifically target the curriculum redesign initiative, survey findings did provide insight into general perceptions about the college's environment in relation to creativity-fostering characteristics. Focus group and interview participants provided details regarding the aspects of the college culture, such as a value placed on teaching and innovation, which encouraged course design working groups to take risks and share creative ideas as they made changes to the curriculum.

Perhaps the most frequently mentioned source of organizational encouragement for changing the curriculum was the college's focus on students' learning as the goal of the veterinary medical education program. Referred to as the "product" of their program by one

focus group participant, faculty explained that their job is to produce a veterinary graduate who can succeed in the workforce. When it became evident that veterinary graduates were lacking in skills desired by employers, college leaders and faculty agreed it was time for curricular change. Focusing on the students' needs became a strong source of encouragement for faculty as they engaged in the curriculum redesign effort. Faculty commented that students' learning is the primary goal of the program, and all of their activities during the curriculum redesign process were driven by the ultimate goal of preparing students. As educators, study participants recognized their responsibility to students and made every effort to maintain the students' learning at the forefront of curricular conversations.

Supervisory encouragement

Leadership in the college under study involves the executive committee, which consists of the dean, associate deans, and department heads. Study participants described the role of college leadership throughout the curriculum redesign initiative, and suggested college leaders were important in establishing trust, maintaining communication, and possessing a vision for change. With skills such as change management, leaders were able to address concerns for the process and obtain faculty buy-in. Support from college leaders was described as a significant reason for the success of the curriculum redesign. While the dean did not play an active role in meetings, her verbal support was evident. One college leader explained that the dean's visionary attitude and encouragement enabled faculty to think creatively about the curriculum rather than having fear of retribution. Department heads also played a role in supporting their faculty and encouraging participants to take risks as they made curricular decisions. One college leader suggested that she would have preferred to involve the department heads earlier in the process to

thwart initial misconceptions. Once department heads learned about the process and became involved, they were better able to support the process and encourage their faculty to participate.

Communication and trust. When discussing factors that contributed to the success of the curriculum redesign initiative, study participants repeatedly mentioned the role of communication. Communication among leaders of the college was essential and ensured that department heads understood the process when having conversations with their faculty. Keeping the faculty informed was also important, and through faculty forums, curricular decisions were shared regularly with faculty, and opportunities for feedback were intentionally embedded throughout the PRD process. Faculty participants appreciated the amount of communication from leaders throughout the process, and described the process as a "bottom-up" approach rather than a "top-down" approach. Administrators were careful to remain in the periphery as champions for the process and conduits of information rather than as visible drivers. Study participants expressed the importance of faculty buy-in for the process, and communication played a critical role in maintaining support for curricular decisions. At times when resistance occurred or concerns were raised, one administrator's credibility enabled her to have difficult and necessary conversations with faculty. As she explained, "I think another role I have had and other people have told me this, is that I have been here a long time so I have relationships with lots of people in the college, and sometimes, I can have a conversation with people that others might not be able to have, and have a positive response and at least hear the concerns, and then bring those back to the people doing the planning so that everyone really hears each other." As a liaison between the general faculty and CRPT, the administrator was able to maintain a constant flow of communication throughout the process.

Along with communication, trust was mentioned as an important aspect of the process. Specifically, college leaders showed trust in the faculty and, in turn, faculty trusted decisions made by the leaders, including the decision to commence a curriculum redesign. One administrator explained, “We never had to go to the dean and say, ‘Mother, may I go do this?’ She trusts us to do things and keep her updated.” The dean was also described as a fair person who listens to all perspectives before making a decision, which results in a sense of trust as she makes decisions for the college. Another administrator was also described as trustworthy – “The former associate dean has incredible street credibility in the college, and I think most people would believe that if she started a process, it was a good process.” The trust faculty felt for their leaders, therefore, translated to a trust in the curriculum redesign process.

Vision. When discussing characteristics of the leaders in the college, one administrator explained, “I think the leadership of the college, the dean for example, is not afraid of change,” which creates a culture in which the leaders are willing to envision possibilities and embrace change. Another administrator described the dean and explained, “I think the most common word that people use with her is ‘visionary’ if they are describing her. I think that plays out and people have expectations that she’s going to be open to new ideas because she has shown that she is a visionary.” When describing the role one administrator played throughout the curriculum redesign process, participants suggested that her ability to envision potential barriers helped faculty plan and consider multiple options when making curricular decisions. College leaders, including department heads, played the important role of helping faculty “see the bigger picture,” especially when discussing unknowns, such as future class sizes and the ever-changing state of veterinary medical education. Given the global nature of the curriculum redesign process, as one participant described it, leaders who could maintain a focus on the greater goal of promoting

student learning were more successful in addressing faculty concerns throughout the curriculum redesign process.

Change management. Administrator interviews revealed change management as a necessary leadership skill when commencing a curriculum redesign process. One administrator explained that change is constant in academia, but because the curriculum redesign process involved "global change" across the college, deliberate change management was necessary to ensure its success. Specifically, conflict management became important as a minority of faculty resisted change. Difficult conversations occurred and required leaders who could genuinely hear concerns and influence positive change. In the faculty forums, change management became important as leaders and CRPT members received feedback on the process. Often, faculty who resisted were those who lacked information or pedagogical knowledge to support the proposed changes. It became the role of leaders and the CRPT to expose faculty to the necessary information and evidence-based literature behind curricular decisions. Equipped with data, leaders could promote change more effectively. Along with change management, faculty expressed the important role leaders played in establishing a college culture that supported teaching.

Work group supports

The main mechanism for implementing curricular change stemmed from the efforts of the faculty course design working groups. Focus group participants emphasized the major role of the course design working groups as faculty collaborated to redesign courses. Faculty from all five departments were represented in the working groups and included a diverse combination of foundation scientists and clinicians. Faculty from all professional ranks were intentionally invited to participate, and members of the Curriculum Review Planning Team (CRPT) served as

facilitators and a source of communication across different working groups. The course design working groups were credited for several positive aspects of the curriculum redesign process, including an increased sense of community, openness, and trust and comfort.

Sense of community. A recurring theme throughout the curriculum redesign process was the enhanced sense of community and collaboration as a result of participation in the course design working groups. Faculty expressed an appreciation for the opportunity to meet new people across departments. As one faculty member explained, "One of the things I did like, though, and have continued to like throughout the process of developing courses, is the engagement with other faculty in completely disparate areas and having those discussions. I'm really excited about the integration of courses and the discussion with different course coordinators and the synergism. I think that has tremendous potential." The diverse nature of the course design working groups also fostered an atmosphere of idea sharing without the fear of judgment. Faculty explained that they enjoyed being able to share new, and sometimes, incomplete ideas with their colleagues without fear. The course design working groups were collaborative and faculty participants showed respect for their colleagues as ideas were shared and changes were proposed. College leaders also mentioned the amount of respect in the various groups allowed for collegial and constructive discussions about the curriculum. These conversations resulted in more intentional integration across courses as faculty continue to collaborate when they teach similar material. The course design working groups were credited for being a mechanism for creative thinking as part of the curriculum redesign process. As one administrator described, "Probably the most profound place where creativity and collaboration occurred was when we put the working groups together and they started thinking about things they could do in their courses and you started to get input from multiple different people from

different areas of expertise and with their different backgrounds." Faculty discussed the various opportunities for creativity and collaboration as courses were modified, combined, adjusted and moved into different program years, and created from a blank slate. As they redesigned courses, faculty reported new ways of solving educational problems than had been previously attempted. For example, in previous team-taught courses in the curriculum, faculty would divide and conquer the necessary content in a fragmented manner, often never coming together to discuss the purpose of the course. In designing new courses as part of the redesign effort, however, faculty were creative about ways to engage multiple instructors, and instead, viewed the experience similar to a collaborative research project in which multiple people collaborate to reach a common goal.

Openness. In addition to feeling open to taking risks, faculty also reported being open to new ideas as they collaborated in the course design working groups. Administrators explained that the redesign effort was successful because faculty were willing to "let go" of established courses or content and be open to new ways to teach students. One administrator described the course design working groups as think tanks, and the sentiment was shared as another administrator recalled witnessing "aha" moments in faculty who realized there might be a different way to do things in the curriculum. Faculty explained, "There were no constraints on things, and people, within reason, were allowed to dream about what [the curriculum] could look like." This ability to envision many possibilities enabled faculty to think creatively as they redesigned courses and developed new ones. The diverse make-up of the course design working groups also enabled faculty to hear multiple perspectives, and by being open to those perspectives, meaningful collaborations resulted.

Trust and comfort. When discussing factors that led to the success of the curriculum redesign initiative and their ability to solve problems creatively, faculty participants reported an increased sense of trust and comfort with their colleagues. Faculty also trusted the PRD process and became more comfortable with it as they continued to learn more about pedagogical theory and as they utilized the data to make curricular decisions. According to study participants, faculty engagement throughout the process resulted in a faculty-driven rather than a top-down approach to curricular redesign, which fostered trust in the process and confidence in the potential of the new curriculum. In the course design working groups, faculty mentioned feeling open to sharing ideas without fear of reprisal. One study participant explained, "I felt very free to say the first thing that came to my mind. Nothing stifles creativity like me being scared of you or me feeling like my tenure is on the line." The culture of trust established in the course design working groups enabled the free exchange of ideas, resulting in enhanced creativity.

Respect. Faculty participants repeatedly mentioned the role of respect as a factor that contributed to their creativity and to the success of the course design groups. As the faculty in the course design groups collaborated to solve various curricular problems, they recognized and respected each other's expertise. One study participant explained, "Regardless of what course or discipline we were talking about, there was an implicit understanding that you had expertise, but you were not the only person in the room who knew something about that or who could provide input." In addition to disciplinary expertise, study participants acknowledged their colleagues who had pedagogical expertise and extensive teaching experience. Those considered "well respected teachers" were frequently sought for input and recognized for their experience. As faculty provided input on course content, they not only respected their colleagues' expertise, but they also demonstrated respect during disagreements. One administrator discussed her

observations of the respectful atmosphere by saying, “I would commend the faculty on the way they’ve embraced those conversations and instead of throwing things out and stomping out, they would instead say, ‘I might not love what you’re saying, but I’m willing to listen to it.’”

Autonomy or Freedom

Risk-taking

Faculty participants discussed a level of comfort and openness among the course design working groups, which enabled them to engage in more curricular risk-taking and experimentation. Often, incomplete ideas would be shared in the course design groups, and faculty recognized the brainstorming process was “messy.” An administrator explained, “We understand that being willing to fail is a positive characteristic,” and these sentiments were shared among focus group participants. Study participants described a sense of “grace” as they recalled times when learning activities failed in redesigned courses. One participant explained, “I look back at some of the things that happened in the critical thinking sessions [as part of the Professional & Clinical Skills course] and say to myself, ‘You know, that didn’t come off the way we wanted, but I haven’t permanently harmed them by doing this failed laboratory experience,’ so there’s a little bit of a safety net.” The collaborative culture of the course design working groups also helped faculty recognize that they were a team, which felt “freeing” as they took risks and experimented with new educational methodologies and learning activities. This sense of freedom translated to other groups, including the Curriculum Committee. When the committee chose between a curriculum framework consisting of major change and another framework consisting of minor curricular changes, one committee member suggested they should, “Go big or go home,” indicating a willingness to take risks and commit to the major change initiative. The committee ultimately voted on the curriculum framework involving the

most change from the previous curriculum, and the course design working groups continued the attitude of risk-taking and experimentation as they worked to implement those changes.

Ownership

As study participants discussed their roles throughout the PRD process, one theme that emerged was an increased sense of accountability to the curriculum and to each other. The course design groups were intentionally formed to include a diverse group of faculty, and typically, this meant that only one disciplinary expert or specialist was present in the group meetings to represent his or her departmental colleagues. Study participants reported a sense of responsibility in ensuring their colleagues were kept informed of curricular decisions. When a course design group needed additional data or information, the discipline representative felt motivated to solicit input from their departmental colleagues and report back to the course design group. Furthermore, study participants discussed the importance of adhering to the decisions made by the course design working groups. While one study participant attributed accountability solely to the course coordinator, the majority of focus group participants expressed desire for a mechanism that could encourage instructors to adhere to the curricular decisions made by each course design group. This increased sense of accountability and desire to demonstrate integrity toward curriculum redesign process resulted in a faculty that felt empowered to take ownership of the curriculum and responsibility for its success.

Sufficient Resources

Expertise

Study participants discussed the role of expertise in contributing to their creativity throughout the curriculum redesign process. Some study participants suggested that at the beginning of the PRD process, many faculty members lacked expertise in areas of pedagogy and

effective teaching. As conversations with educational experts occurred, study participants suggested that faculty became more comfortable and knowledgeable with concepts, such as active learning, course alignment, learning outcomes, and assessment. College leaders expressed the importance of inviting external speakers and educational experts to present about various teaching and learning topics. Guest speakers included experts in the area of integrative learning and active learning. The variety of speakers were intended to reach faculty at all levels of their teaching journey, from those seeking innovative approaches to those interested in simple strategies for enhancing their teaching. A consultant from the university center for teaching and learning also facilitated the majority of working group sessions and supported faculty by infusing and modeling pedagogical principles throughout the process. Additionally, members of the CRPT included faculty with expertise in clinical skills training, educational technology, and program assessment. Although faculty demonstrated less confidence in their pedagogical expertise at the beginning of the curriculum redesign initiative, an increase in confidence and conversations about teaching and learning were observed as a result of their participation in the working groups and attendance at college-wide teaching seminars.

Study participants also suggested that the curriculum redesign process enabled them to become more knowledgeable about the curriculum and what their colleagues taught in other courses. Historically, teaching in the college has been a private activity, resulting in siloes across departments. As a result of participation in the curriculum redesign process, however, faculty collaborated with colleagues in other departments and learned what each other was teaching. One focus group participant was hired by the college at the time when boot camp sessions were starting. The participant described her initial lack of knowledge concerning the existing courses. As the process continued, the faculty member became more comfortable with the curriculum and

knowledgeable about courses across program years. Unlike research, which is typically considered a public activity in academia, teaching is often more private. As a result of the conversations throughout the curriculum redesign process, however, teaching has become more transparent, resulting in faculty members' increased level of comfort and knowledge about the curriculum. Both collaborating with diverse colleagues and gaining expertise in areas of education and the curriculum has enabled faculty to think creatively as they redesigned and designed courses for the new curriculum.

Process support

Study participants recognized that the curriculum redesign effort involved a significant time commitment. From attending meetings, to analyzing data, and to redesigning courses, faculty dedicated a great amount of time towards the effort. Faculty emphasized the important role of process support and resources during this time-intensive process. After deciding to embark on a curriculum redesign initiative, one study participant explained that the college sought support from the university teaching and learning center and utilized the center's research-based curriculum redesign model. The curriculum design and pedagogical expertise from the center and consultants provided support to the faculty in areas with which they were not initially comfortable.

Furthermore, study participants described the CRPT as a major source of support because they helped to facilitate meetings, created materials and took notes throughout the process, and served as a source of information to enhance communication across departments. Faculty explained that the CRPT enabled them to think creatively because they did not have to be concerned with the logistical aspects of meetings. As one participant described, "Stuff came to me already mostly done and all I had to do was change it, and I do appreciate what that meant.

[CRPT member] would come to my office and she'd say we need to do this and I'd reply, 'How are we going to do it?' and she'd say, 'Let's just brainstorm about it,' and then she'd leave and I didn't have any homework from that meeting." Faculty expressed appreciation for the support received from the CRPT, including their organization and willingness to do the "dirty work." Faculty were encouraged to think creatively, and the CRPT supported them by handling all of the logistics and preparation.

Financial support

When discussing other sources of support, college leaders explained the importance of financial support throughout the process. The use of differential tuition funds enabled the program to obtain laboratory equipment, educational materials, and hire staff to support the process. Even smaller contributions, such as providing lunch at the faculty meetings, made the process more "palatable," according to one college leader. The meals created a comfortable atmosphere for the faculty, and administrators were able to use meals as a small token of gratitude for faculty members' time and effort. Unlike other programs that have one or two people facilitating a curriculum redesign, the program under study was able to utilize funds to hire staff whose sole job was to support the curriculum. Without finances serving as a barrier, the faculty were able to envision the best curriculum possible.

Pressures

Challenging work

Focus group participants suggested the process of gaining expertise in a new disciplinary area of education and pedagogy has been a welcomed challenge throughout the curriculum redesign process. As one participant said, "We're usually going to the literature for our areas of expertise and now we are going to the literature for educational methodology…or how you can

engage students…and that's been a really fun and exciting challenge for me." Learning about a new body of knowledge exposed faculty to new perspectives, which they applied to their own disciplinary areas and teaching. Results from the Creative Environment online survey also suggest that the level of perceived challenge in the college positively influences faculty members' creativity. As previously discussed, survey items with the highest reported means included those related to the level of perceived challenge and importance of work efforts.

Workload pressure

The category of workload pressure did not reach saturation, however, focus group participants did mention a perceived "pressure to perform," and prepare students, and this sense of pressure motivated faculty to engage in activities that inform their teaching. As one study participant described the curriculum redesign process, "It felt more like putting on a show, like putting on a play because we're all here together, we sort of have a script, we have to make it up from here, we have to build everything, and opening night is opening night and you're going to be ready. The show must go on." While this data suggests that workload pressure served to motivate the faculty to be creative in the curriculum redesign process, findings also suggest that faculty felt time pressure to accomplish curricular tasks. Study participants mentioned a desire for "more time," and meeting notes substantiated this desire. Additional research is needed to determine the role of workload pressure in influencing creativity during the curriculum redesign process.

Organizational Impediments

Disciplinary expertise

Study participants briefly discussed the role of disciplinary expertise in the curriculum redesign process. A focus group participant recalled the boot camp sessions in which faculty

collaborated with veterinary practitioners to categorize existing curricular content. In her recollection, the study participant suggested that some faculty spent their time in the boot camp sessions "campaigning" for their course content and appearing to forget the ultimate goal of graduating a mixed animal practitioner who does not require specialist knowledge. In some of the departmental meetings, the researcher observed similar instances of "campaigning." In these instances, faculty with specialist knowledge expressed their concerns when disciplinary content was removed from courses. Additional investigation is needed to identify the role of disciplinary expertise as an impediment or stimulant to creativity in the curriculum redesign process.

Promotion and tenure

Study participants briefly discussed the emphasis on research activity as a determinant of faculty promotion and tenure in the college. While teaching remains important, some faculty suggest that their research activities can, at times, take priority. With these competing priorities, faculty become motivated by the activities that will secure them career advancement. Findings suggest that an emphasis on conducting medical research over SoTL is present in the culture of the college, but additional data gathering is needed to understand faculty members' experiences in this area. While recent SoTL initiatives in the college appear to be shifting the culture toward an emphasis on teaching scholarship, the role in unclear as it relates to creativity in curriculum redesign.

New educational complex

While study participants discussed the role of the new educational complex in encouraging innovative teaching, study findings suggest that the initial move into the new complex served as an obstacle during the curriculum redesign process. As the college prepared to move into the new complex, faculty forums were being held to discuss curricular changes and

obtain feedback from all departments. The researcher's reflections speculate that the amount of change occurring, both with the new educational complex and with the new curriculum, potentially heightened the perceived level of stress among the faculty. However, data gathered from administrator interviews indicated that the new educational complex has elevated teaching innovation during the implementation phase of the PRD process. Additional data gathering is needed to determine the role of the new educational complex as an impediment or stimulant to faculty creativity in the curriculum redesign process.

Process Byproduct

As Amabile's (1996) model focuses on the organizational factors that stimulate and impede creativity, the result or outcome of her model is creativity itself. The current dissertation study found additional outcomes or byproducts in the form of emotions. Study participants described feeling a variety of emotions, including excitement, apprehension, and frustration. These emotions, among others, were experienced by faculty throughout the curriculum redesign process for many reasons. For example, some study participants reported feelings of apprehension during the boot camp sessions as they recalled hesitating to share their opinions when they felt a lack of expertise in certain content areas. In this example, the feeling of apprehension served as an outcome of the curriculum redesign process that negatively affected faculty members' willingness to be open and creative. Focus group participants also discussed the feeling of excitement as they learned new educational and pedagogical concepts. The feeling of excitement that resulted from the curriculum redesign process motivated the faculty to remain active in the process and stimulated their creativity in the course design groups. Emotions appear to not only be byproducts of the PRD process, but also stimulants and impediments to creative

thinking during the process. Additional research is needed to gain a better understanding of how emotions influence creativity during the PRD process.

CHAPTER V

CONCLUSION

Curriculum Renewal in Veterinary Medical Education

In higher education, routine modifications to a curriculum are common (Council of Independent Colleges, 2018). The exponential growth of disciplinary knowledge, along with the introduction of new teaching strategies as a result of educational research, continually prompt programs to modify their curricula. In veterinary medical education, "the logarithmic explosion of knowledge has been cited as possibly the primary driving force for all the changes in veterinary education throughout its history" (Lane, Kustritz, & Schoenfeld-Tacher, 2017, p. 381). Programs also face the pressure to remain current and appealing to students (Council of Independent Colleges, 2018). As students recognize the amount of financial debt that can result from seeking a college degree, they have become increasingly careful consumers in choosing which colleges to attend. Accreditation, with its emphasis on student outcomes, has also been credited with playing a major role in curriculum design and redesign (Council of Independent Colleges, 2018; Lane, Kustritz, & Schoenfeld-Tacher, 2017). While the need for curriculum redesign is evident, few studies in veterinary medical education focus on the process itself.

Veterinary medical education scholarship has historically focused primarily on course-level design, innovative teaching strategies, and the integration of clinical skills, professional skills, and other non-technical competencies (Lane, Kustritz, & Schoenfeld-Tacher, 2017). Veterinary medical education researchers recently conducted a survey of members of the Association of American Veterinary Medical Colleges (AAVMC) to obtain information about their curricular management and curricular change processes (Lane, Kustritz, & Schoenfeld-Tacher, 2017). In their survey of 38 AAVMC member institutions, "27 of the schools reported

being somewhere along the process of curricular renewal within the past 5 years, with about half of those in the development phases and the other half in implementation or beyond" (p. 385). One scholarly paper by Foreman et al. (2017) mentioned strategies for fostering curricular change. In their paper, the authors described the curriculum renewal process at the University of Illinois at Urbana-Champaign College of Veterinary Medicine. The college obtained support from a private consulting firm that specializes in coaching corporations to implement "transformational change" (p. 472). Lessons learned from their curricular change process included the need to create a sense of urgency for the curricular change, utilize a process that is faculty-driven, and harbor college leaders who regularly provide information about the curriculum and a global view of student outcomes. A veterinary medical education paper by Ilkiw et al. (2017) recognized that it takes time to facilitate a curricular change effort in a college. Authors also emphasized the importance of communication and transparency, financial resources to support the process, and leadership with vision and commitment to change.

Program Redesign at the Texas A&M University CVM

The impetus for curricular change in veterinary medical education has been made apparent through the recent publication of a special issue of the Journal of Veterinary Medical Education on the topic of curriculum renewal (Lane, Kustritz, & Schoenfeld-Tacher, 2017). In the special issue of the journal, veterinary medical education programs reported on their curriculum renewal process, achievements, and lessons learned. One program, in particular, from the College of Veterinary Medicine and Biomedical Sciences (CVM) at Texas A&M University utilized the Program (Re)Design (PRD) model to redesign the first three, pre-clinical years of the four-year veterinary medical education program (Chaney, et al., 2017; Macik et al., 2017).

The PRD model encourages a learner-centered curriculum and involves eight steps, including: 1) Form and orient team, 2) gather data, 3) create program learning outcomes, 4) create competency rubrics, 5) create curriculum map, 6) create curriculum materials, 7) implement and assess, and 8) refine. A team of faculty and staff from the CVM, called the Curriculum Review Planning Team (CRPT), facilitated the PRD process in the college. For a detailed overview of the program's curriculum redesign process, refer to Chaney et al (2017) and Macik et al. (2017).

Creativity

While recent papers on curricular change in veterinary medical education allude to factors that lead to successful curricular change and innovation (Foreman et al., 2017; Ilkiw et al., 2017), these papers do not necessarily focus on creativity as part of the curricular change or innovation process. Amabile (1988) defined organizational innovation as "the successful implementation of creative ideas within an organization" (p. 126). Creativity, therefore, is the first step. Once someone is creative in an organization, he or she can implement that creativity and become innovative, thus changing an aspect of the organization – in this case, the curriculum. For the purposes of the current research study, creativity was defined as "the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel and useful* as defined within a *social context"* (Plucker, Beghetto, & Dow, 2004, p. 90). The dissertation study aimed to gain an in-depth understanding of how faculty demonstrated creativity during the curriculum redesign process and how the context or organization influenced their creativity throughout the PRD process.

Creativity research has often been organized by a scheme termed the "Four P's," in which creativity research is classified into the categories of person, process, press, and product

(Rhodes, 1961). The “creative person” category relates to research about the personality characteristics of creative individuals (Claxton, Edwards, & Scale-Constantinou, 2006; Sternberg & Lubart, 1991; Wallace & Gruber, 1989). The “creative process” category relates to research about the behavior and thinking that underlie and lead to creativity (Lubart, 2001; Runco & Okuda, 1988, Runco & Chand, 1995). The “creative press” category focuses on research about the situational and social dynamics that influence creativity (Amabile, 1989; Amabile, 1998; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013). Finally, the “creative product” category organizes research about the outcomes of creative thinking and the results of creative processes (Besemer & Treffinger, 1981; Getzels & Csikszentmihalyi, 1976; Reis & Renzulli, 1991).

In relation to creative processes and people, a review of the literature outlined the cognitive and affective aptitudes associated with creativity (Amabile, Barsade, Mueller,& Staw, 2005). Creative cognitive aptitudes were defined as the cognitive processes utilized in creative thinking. Those processes include problem finding, divergent thinking, and convergent thinking (Isaksen, Dorval, & Treffinger, 2011; Parnes, 1997). Furthermore, research on creative persons suggests certain affective aptitudes contribute to creativity (Adelson, 2003; Dacey, 1989; Feist, 1998; Lucas, Claxton, & Spencer, 2013; Sternberg, 2006; Vellerand, 2010; Zelado, et al., 2014). Such affective aptitudes include perseverance, risk-taking, curiosity or openness to new ideas, tolerance for ambiguity, and passion.

Research Purpose

This dissertation study aimed to identify evidence of creativity as faculty redesigned a veterinary medical education curriculum using the PRD process. Such evidence was observed in the form of the creation of a novel and useful curriculum (creative product) and through the

creative cognitive aptitudes (creative process) and creative affective aptitudes (creative person) demonstrated by study participants. Beyond the product, process, and person aspects of creativity, the researcher also investigated the environmental factors (press) that influenced faculty creativity as they redesigned the veterinary medical education curriculum using the PRD process. One model that examines environmental factors associated with creativity is Amabile's (1996) componential model of creativity and innovation. Amabile's model outlines three broad factors that influence creativity in an organization: organizational motivation to innovate, resources, and management practices. The researcher used Amabile's model to investigate the organizational stimulants and impediments to faculty creativity in the redesign of a veterinary medical education curriculum using the PRD process.

Research Method

The proposed study was grounded in a constructivist paradigm, and the researcher utilized Guba and Lincoln's (1989) criteria for trustworthiness and authenticity to evaluate the quality of the research study. Using a qualitative explanatory case study methodology (Yin, 1994), the researcher aimed to identify instances of creativity as faculty used the PRD process to redesign a veterinary medicine curriculum at College of Veterinary Medicine and Biomedical Sciences (CVM) at Texas A&M University. Using Amabile's (1996) framework for organizational creativity, the researcher also aimed to investigate the environmental factors that influenced faculty creativity.

The Creative Environment Online Survey, a modified version of Amabile's (1996) instrument, was used to explore the amount of perceived organizational support for creativity among faculty at the CVM. This secondary data collection tool was used to guide primary qualitative data collection methods. Survey participants consisted of faculty from the CVM. As a means to collect qualitative data, the research conducted a semi-structured focus group session (Yin,

1994) with seven faculty members who were involved in the PRD process to redesign the veterinary medicine curriculum. The researcher also conducted two individual interviews with college administrators from the veterinary program of interest. Documentary materials were collected and included the curriculum framework, which detailed the new courses in the three pre-clinical years of the veterinary medicine curriculum and outlined differences between the previous curriculum and the redesigned curriculum. Meeting notes from the various steps of the PRD process were also collected to augment evidence gathered from the individual interviews (Yin, 1994).

Descriptive statistics were calculated for responses to the Creative Environment Online Survey. Theoretical propositions were used as the general method for analyzing the focus group and interview data (Yin, 1994). Document analyses (O'Leary, 2014), were conducted to support and contextualize data gathered from the individual and focus group interviews (Bowen, 2009). The researcher utilized open-coding techniques, and then grouped the open codes into sub-categories (Saldana, 2016). Finally, Amabile's (1996) contextual theory of organizational creativity was used as a framework to group the sub-categories into major categories.

Research Results

Study findings suggest creativity was evident throughout, and as a result of, the veterinary medical education program redesign process. An analysis of the curriculum framework and meeting notes reveal data associated with both novelty and usefulness. Among the focus group, interview, and documentary data, the researcher found evidence of both creative cognitive and affective aptitudes. For example, instances of divergent thinking through brainstorming were found. Additionally, instances of perseverance and passion were noted. In relation to environmental factors, study findings indicate multiple organizational factors influenced faculty creativity during the PRD process. The initial exploration of the

organizational environment using the Creative Environment Online Survey resulted in an identification of items with the highest and lowest reported means. Items with highest reported means were related to the level of perceived challenge and importance for work efforts in the organization. Items with the lowest reported means were those associate with perceived support received from leaders in the college and opportunities for recognition for creative work. A more in-depth investigation of the organizational environment through focus group and individual interviews revealed that several organization factors influenced CVM faculty creativity throughout the PRD process.

Study findings revealed several environmental factors that fit with Amabile's (1996) model. Organizational encouragement stimulated faculty creativity during the PRD process through a college culture that promotes excellence and innovation in teaching, teaching spaces that allow for the implementation of creative teaching strategies, and a college culture that focuses on student learning. Supervisory encouragement also stimulated faculty creativity during the PRD process, according to study findings, as college leaders utilized effective communication throughout the process, established relationships and trust with the faculty, utilized change management skills, and communicated a clear vision for the college. Findings suggest work group supports stimulated faculty creativity throughout the PRD process. Work group supports included a sense of community present throughout the course design working groups, an openness and willingness to share ideas, a presence of trust and comfort among the faculty, and a demonstration of respect for colleagues.

Study findings point to a level of perceived autonomy or freedom in the college as a stimulant of creativity during the PRD process. Faculty focus group and interview data revealed that participants felt able to take risks, experiment, and potentially, make mistakes throughout the

process without fear of reprisal. Study participants also demonstrated ownership of the curriculum as a result of the PRD process, which fostered their sense of autonomy. When discussing the role of resources in enhancing creativity throughout the PRD process, study participants suggested the involvement of pedagogical experts enhanced their knowledge in the area of educational theory, thus, stimulating their creativity. Support for the process in the form of the Curriculum Review Planning Team and financial support were also mentioned as important resources that enabled faculty to think creatively as they redesigned the veterinary medicine curriculum.

Study findings that did not fit Amabile's (1996) model of organizational creativity included the role of the external environment (e.g., an accrediting body) in influencing CVM faculty creativity as they redesigned the curriculum. Additionally, focus group and interview findings revealed emotions, as a process byproduct, and it is unclear the role these emotions played in influencing faculty creativity throughout the PRD process. Future research is needed to investigate the role of emotions as they relate to faculty creativity during the PRD process.

Implications

The results of this study have implications for faculty development work and for curriculum design efforts at higher education institutions. It can be especially difficult at research institutions to encourage faculty to be creative in the area of curriculum redesign, as they can encounter barriers such as disciplinary isolation (Hubball & Pearson, 2010), reward systems that value research over teaching, lack of faculty time (Hubball & Pearson, 2010), and general lack of pedagogical expertise (Hubball & Pearson, 2010; Innes, 2004; Jones, 2002; McInnis, 2000; Oliver & Hyun, 2011; Stark & Lattuca, 1997; Toombs & Tierney, 1991; Walkington, 2002). As faculty developers support colleges in the area of curriculum design and redesign, they can

utilize results from this study to facilitate an environment that encourages creativity in not only the design of the curriculum, but also in strategies for overcoming organizational barriers. Ilkiw et al. (2017) recognized the importance of educating and supporting faculty in the areas of pedagogy and curriculum design, and yet, their efforts to implement a faculty development program during the implementation of their revised curriculum resulted in limited faculty engagement. The PRD model offers a new model of faculty development (Fowler, Macik, Sandoval, Bakenhus, & MacWillie, 2016), and with results from this study faculty development efforts can incorporate methods for stimulating faculty creativity and engagement during the PRD process.

Study Limitations and Future Work

The researcher acknowledges limitations in this study calling for future research. The Creative Environment Online Survey was modified from the KEYS instrument (Amabile, 1996), and future work is needed to investigate the psychometric properties of this modified instrument. In reference to Amabile's (1996) model for organizational creativity, the categories of "pressures," such as challenging work and workload pressure, did not reach saturation in the current study. Though some qualitative data suggested faculty appreciated gaining expertise in a new area of educational theory and pedagogy as a result of participation in the PRD process, additional research is needed to investigate the role of challenging work in stimulating or impeding creativity during the PRD process. In regards to workload pressure, study participants suggested they appreciated the intellectual challenges presented during the PRD process. On the other hand, participants also suggested a lack of time created instances of undue pressure. Additional research is needed to investigate the role of workload pressure as it relates to creativity during the PRD process. Finally, the category of "organizational impediments"

necessitates future research. Study findings introduced impediments, such as disciplinary expertise, promotion and tenure practices, and the new educational complex; however, these sub-categories did not reach saturation and require further investigation.

With further research, additional factors contributing to faculty creativity in curriculum redesign can be explored. Findings from this study suggest that higher educational programs can benefit from a structured curriculum redesign process, which encourages creativity and maximizes implementation feasibility. These findings can be used to improve faculty development efforts, assist degree programs as they work to make themselves relevant for future students, and support administrators as they face challenges in communicating higher education's important role in public life.

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APPENDIX A

RECRUITMENT SCRIPT – SURVEY

Howdy! I would like to invite you to complete a brief survey about the work environment in the College of Veterinary Medicine & Biomedical Sciences. This survey is part of a dissertation study aimed at examining the Program Redesign (PRD) model (Fowler, Macik, Sandoval, Bakenhus, & MacWillie, 2016) and contextual factors that impact the curriculum redesign process. The survey is estimated to take you approximately 10 minutes to complete. Your responses are voluntary and will be anonymous.

https://tamu.qualtrics.com/jfe/form/SV_8jJHWG24EgSLINL

If you have any questions or concerns, please contact Maria Macik, Co-PI on the research study, at mmacik@cvm.tamu.edu or (979) 845-3878. For questions about your rights as a research participant, to provide input regarding research, or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office by phone at (979) 458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu.

IRB-Approved Research Study #IRB2015-0564D

APPENDIX B

RECRUITMENT SCRIPT – FACULTY/ADMINISTRATORS

Hi, Dr. _____:

As you know, I am conducting my dissertation research on the curriculum redesign initiative the college recently underwent and is continuing through the working groups for each course. I am using a case study method to investigate faculty members' experiences within the college, and I would greatly appreciate your participation. Should you decide to contribute, your participation would involve participating in a one-hour focus group with your colleagues or an individual interview with me. The focus group or individual interview will be audio recorded and later transcribed for analysis. Your responses will be confidential and your name will not be associated with the results of the study.

Please let me know if you are interested in contributing to my study. Your input would greatly benefit future curriculum work and would inform institutions about the environmental factors that contribute to faculty members' creative thinking throughout a curriculum redesign initiative. If you decide to participate, I will send you some possible meeting times for the focus group or interview. Thank you for your dedication to the curriculum and all of your efforts thus far!

APPENDIX C

FOCUS GROUP PROTOCOL – FACULTY

1. Tell me how you came to be involved with the curriculum redesign effort in the college.
2. In what ways have you contributed to or participated in the curriculum update initiative within the college?
3. Describe your experiences throughout the curriculum redesign process.
    a. Which part(s) of the curriculum redesign process did you enjoy the most, and explain. Which parts were most difficult for you? Explain.
4. In what ways did the curriculum update enable you to think creatively?
    a. Probing Question: Think back to the beginning of the initiative and through all of the subsequent activities, such as the data analysis teams, open forums, and current working group meetings.
5. Think of a time throughout the curriculum update when you felt something new was being developed or suggested. Describe your individual or group's thinking process.
    a. Probing Question: How did the group go about developing something new or suggesting changes to the curriculum?
6. How did you or the group feel when you were developing something new or suggesting changes to the curriculum?
    a. Probing Question: What types of emotions do you recall being present during the curriculum redesign process?
    b. Probing Question: What reasons could explain these emotions?
7. Describe ways in which the surrounding environment (college climate, administrators, ad colleagues) influenced your or the group's ability to think creatively as you participated

in the curriculum update?

   a. Probing Question: How did your immediate surroundings as well as broader environmental factors contribute to your creative thinking as you participated in the curriculum redesign initiative?

8. Is there anything else about the curriculum update that you believe contributed to your ability to think creatively about the curriculum?

APPENDIX D

INTERVIEW PROTOCOL - ADMINISTRATORS

1. Tell me how you came to be involved with the curriculum redesign effort in the college.
2. In what ways have you contributed to or participated in the curriculum update initiative within the college?
3. Describe your experiences throughout the curriculum redesign process.
    a. Which part(s) of the curriculum redesign process did you enjoy the most, and explain. Which parts were most difficult for you? Explain.
4. What contextual factors affected the curriculum redesign process?
    a. How did these factors affect the curriculum redesign process?
5. What reasons or contextual factors prompted the DVM program to undergo a curriculum redesign?
6. Is there anything else about the curriculum update that you believe contributed to your ability to think creatively about the curriculum?

APPENDIX E

Challenge				
Question	**Strongly Disagree**	**Disagree**	**Agree**	**Strongly Agree**
I feel that I am working on important projects	□	□	□	□
The tasks in my work are challenging	□	□	□	□
I feel challenged by the work I am currently doing	□	□	□	□
The tasks in my work call out to the best in me	□	□	□	□
I am satisfied with the level of creativity called for in my daily work	□	□	□	□
Unity and Cooperation				
In this organization, there is a lively and active flow of ideas	□	□	□	□
There is a generally cooperative and collaborative atmosphere in this organization	□	□	□	□
This organization has a nurturing environment	□	□	□	□
There is an open atmosphere in this organization	□	□	□	□
Recognition				
People are recognized for creative work in this organization	□	□	□	□
People are rewarded for creative work in this organization	□	□	□	□

Creativity Supports				
New ideas are encouraged in this organization	□	□	□	□
People are encouraged to solve problems creatively in this organization	□	□	□	□
This organization has a good mechanism for encouraging and developing creative ideas	□	□	□	□
Supervisor				
I feel that top management is enthusiastic about my project(s)	□	□	□	□
Freedom				
In my daily work environment, I feel a sense of control over my own work and my own ideas	□	□	□	□
Evaluation				
Ideas are judged fairly in this organization	□	□	□	□

Adapted from Amabile, T. (1989). The creative environment scales: Work environment inventory. *Creativity Research Journal, 2,* 231-253

APPENDIX F

Major Category	Sub-category	Associated Open Codes
Creative Outcome	Creativity	Novel Adapt New ideas Different perspectives New experience Problem solving Brainstorming Vision Fun and joy Openness Blank canvas New courses Integration Pedagogical creativity Flexibility Publications Experimentation Tolerance for ambiguity Thinking outside the box Visioning Think tanks Well-defined problems Complex problems Problem solving Perseverance
	New curriculum	Professional & Clinical Skills course Decisions about content Clinical relevance Working groups Analysis teams Boot camp New courses Modified courses Curriculum mapping Active learning Enjoyable curriculum Blank canvas I / R / D Integration Eliminate gaps and redundancies

		Faculty voice Knowledge of curriculum Respect for faculty time Being part of something new Global view of curriculum Faculty engagement Critical thinking
	Innovative teaching	Case-based learning Center for educational technology Innovative projects Active learning Minor changes Sharing teaching innovations New teaching approaches
	Data-driven process	Data-driven Data Employer data Stakeholder input Comprehensive data collection
External environment	External environment	Changing profession Millennial learners Accreditation Curriculum revision at other institutions Veterinary education meetings Differential tuition High-impact learning Emphasis on outcomes assessment Time for change
Organizational encouragement	College culture	Collegial Consensus building Faculty-driven Emphasis on teaching Value on teaching New building Innovative spaces Culture of innovation Culture of excellence
	Focus on student learning	Focus on student learning End product Focus on student Passionate about students Best education possible Students' best interest Meeting future needs

		Veterinary graduate New graduate Care for student learning
Supervisory encouragement	Communication and trust	Credibility Dean support Executive committee support Engaging others Champion Conduit of information Trust Communication Educate others Empowering Servant leadership Advocacy Openness
	Vision	Vision Visionary Big picture Envisioning Growth mindset
	Change management	Not afraid of change Value change Investing energy Change management Climate for change Engaging others Conflict management
Work group supports	Sense of community	Collaboration Community Idea sharing Collegial Respect Voice Consensus building Engagement Representatives Cohesive group Teamwork Listening Faculty crosstalk Honest conversation Relationships Partnerships

		Integration Teaching others Encouragement
	Diverse community	Diverse groups Different perspectives Meeting new people Different approaches New perspectives Diverse expertise Unique people Different skill sets
	Community – Idea sharing	Generating ideas Idea sharing New ideas Brainstorming Free exchange of ideas Experimentation
	Openness	Over-communicate Conduit of information Informing others Addressing misconceptions Listening Willingness to listen Transparency Faculty forums Individual conversations Open-minded New ideas Willingness to be open Comfort with brainstorming “aha” moments Thinking outside the box Dreaming Possibility thinking Willingness to take risks
	Trust and comfort	Judgment free Freedom to express ideas Free exchange of ideas Building trust Credibility Trust
	Respect	Respect for new ideas Respect for expertise Respectful dialogue

		Respect for experience Respect for educational expertise
Freedom	Risk-taking	Willing to take risks Willing to fail Experimentation
	Ownership	Responsibility Integrity to the process Adherence to group decisions Accountability Ownership
Sufficient resources	Expertise	Diverse expertise Educational expertise External experts Seeking expertise Curriculum design expertise Pedagogical expertise New literature Lack of expertise Clinical skills expert
	Support	CRPT - Meeting preparation CRPT - Meeting organization CRPT - Meeting facilitation CRPT - Pedagogical expertise CRPT - Legwork CTE consultation CET resources Staffing Dean support Encouragement Leaders - Advocacy Department head – Encouragement Executive committee support External consultants
	Financial support	Resources Funding - Differential tuition Funding – Meals Financial support
Pressures	Challenging work	Challenge Problem-solving Learning together Learning something new Hard work

	Workload pressure	Teaching as public activity Time pressure High expectations Pressure to perform Time commitment Time-intensive process Giving your time Lengthy process Time and energy Need more time Respect for faculty time Efficient
Organizational impediments	Disciplinary expertise	Specialists Expert
	Promotion and tenure	Medical research Research over teaching Promotion
	New educational complex	New building New building stress New building change
Affective attributes	Passion	Commitment to education Excitement Passion Love for creativity Enjoy the process Passionate about students
	Persistence	Pushing through resistance Barriers Persistence Commitment Managing pushback
Process byproducts	Emotions	Fun Fascinating Discomfort Challenging Enjoyment Frustrating Satisfaction Ownership Stressful Anxious

APPENDIX G

Integrated Animal Care for Companion Animals (3 credit hours)

New Course

Proposed Course Department: VSCS

This course will provide a foundation in companion animal veterinary care and horizontally integrates content from small animal anatomy, physiology, and immunology and focuses on day-one graduate wellness-care knowledge for the small animal veterinarian. Exposures will include common companion animal species as well as pocket pets and birds.
Examples of content include:

- Nutrition
    - e.g., feeding a healthy pet
- Behavior of normal animals
- Husbandry
- General animal veterinary care
    - e.g., immunization protocols, deworming
- Animal welfare

This course incorporates material from current elective courses:

- Small Animal Preventative Care & Wellness
- Small Animal Nutrition (healthy animal component)
- Contemporary Issues in Animal Welfare

This course will increase opportunities to strengthen implementation of NGOs:

- NGO 1: Comprehensive patient diagnosis (problem-solving skills), appropriate use of clinical laboratory testing, and record management
- NGO 2: Comprehensive treatment planning, including patient referral when indicated
- NGO 13: Animal welfare

Professional & Clinical Skills (3 credit hours)

New Course

Proposed Course Department: VTPP
This course will integrate and reinforce foundational knowledge offered in concurrent courses, professional skills, and technical skills.

Experiential learning opportunities include:

- Applied critical thinking
    - Scenario-based application of foundational knowledge
    - Medical record-keeping (SOAP/legal requirements)

- Technical skills
    - Foundational psychomotor skills.
    - PE of the healthy animal
    - Basic ultrasound use
- Professional skills
    - Ethics / contextual ethical decision-making
    - Leadership
        - Building self-awareness and self-management
        - Increasing awareness around cultural competence
    - Skills for well-being
        - Study skills
        - Nutrition
    - Personal and Practice financial literacy
        - Budgeting, cost of attendance
    - Core communication skills
        - in team-settings
        - in history-taking
        - in providing feedback
        - conflict management

This course will increase opportunities to strengthen implementation of NGOs:

- NGO 1: Comprehensive patient diagnosis (problem-solving skills), appropriate use of clinical laboratory testing, and record management
- NGO 4: Basic surgery skills, experience, and case management
- NGO 5: Basic medicine skills, experience and case management
- NGO 8: Client communications and ethical conduct
- NGO 10: Team collaboration, leadership, and practice management
- NGO 11: Multicultural awareness and personal wellness
- NGO 12: Legal and regulatory compliance

Small Animal Anatomy (4 credit hours)

This course maintains current course lecture/lab hours.

Changes:

- Incorporates neuroanatomy over two semesters (1VM fall and spring)
- "Applied Neuroanatomy" recommended as a "Career-focused track" selection in subsequent semesters

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